THE IRON AGE

THURSDAY JUNE 23, 1892.

The Niles Boring and Turning Mill.

A new type of small boring and turning mill for general work has been brought out by the Niles Tool Works of Hamilton, Ohio. They build two sizes of this design, to swing 37 and 51 inches respectively, the cut representing the smaller size. Although differing somewhat in design from the boring and turning mills hereto fore built by this company, these machines possess the same general characteristics which have made their larger predecessors so popular.

Advantage has been taken of the comparatively small swing of these mills to employ a form of construction insuring strength and rigidity. A single casting forms what would otherwise be the bed, housings and top brace. The column is of a shape which partially surrounds the table, and in its front and rear webs occur suitable apertures for the admission of light to the table from the back.

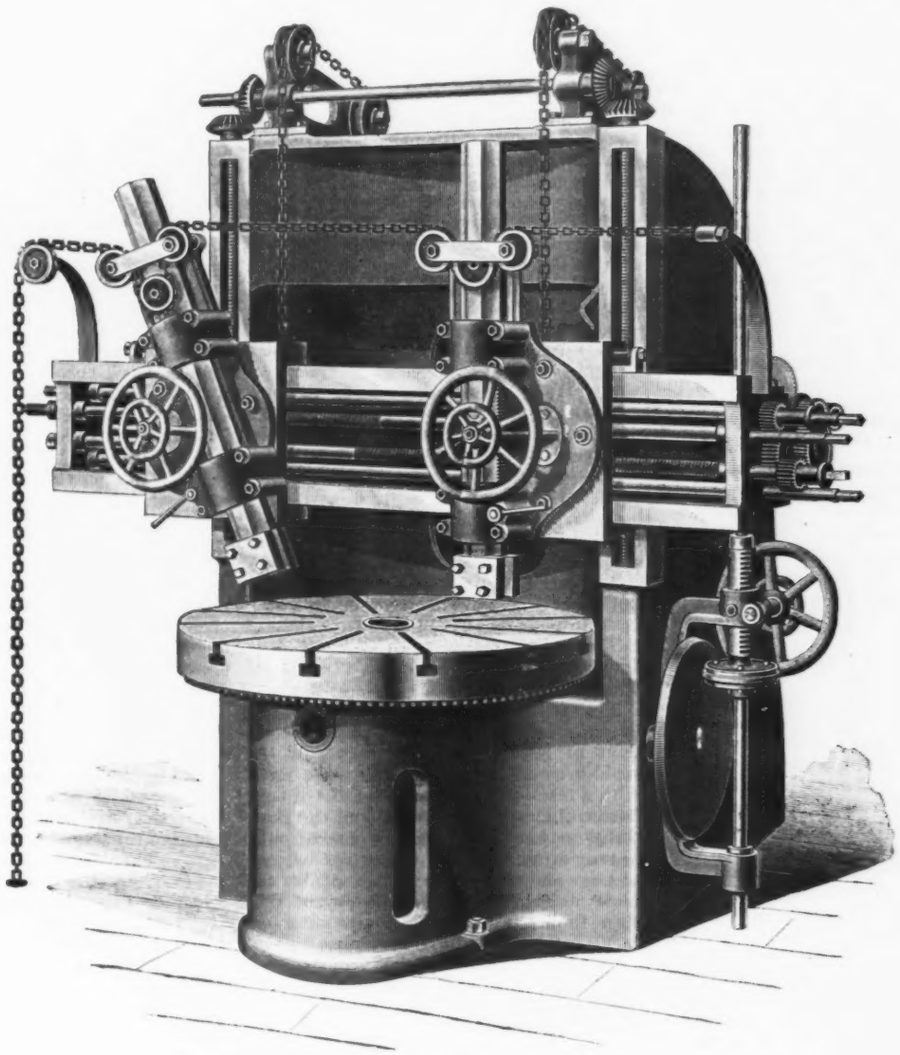
The driving cone is placed at the back and transmits motion through accurately cut bevel gearing to the table. The cone is strongely back geared, which, with the two speeds available from countershafts, affords 16 changes of speed to the table.

The cross rail is bored out in box girder form with wide bearings. It is counterbalanced by weights suspended in the interior of the column, to facilitate its easy and rapid adjustment by hand. The saddles are made right and left, allowing the boring bars to work close together.

The boring bars are of octagonal section and may be set over to operate at any angle. Both are counterbalanced by a single weight so arranged as to render the weight of the bars absolutely inert, no matter how much one or both may be set over for angular work.

The feeds are operated by a friction disk, which permits instant variation of the feed to any degree within its range. The feeds are independent, and the saddles or bars may be fed in the same or opposite directions at the same time. By means of suitable but simple mechanism, the feed may be instantly reversed without shifting the friction disk.

In place of one of the regular heads, this machine is sometimes provided with a special boring head. This consists of a saddle mounted on a rail and carrying a boring spindle driven from a separate cone. It operates while the table remains still and has all the necessary adjustments and changes of feed and speed to make it a complete boring machine. It will be seen that such a head would be capable of boring at any point on a piece of work secured to the table. By its use both holes in engine cranks may be bored at one setting, and absolute parallelism insured.



THE NILES BORING AND TURNING MILL.

The statement that Russia had concluded to stop work upon her Trans Siberian Railway, from Vladivostock to the Ural Mountains, and which has gained wide circulation, is denied. So long as Russia is unfettered by a war in Europe all the money she can divert to this use will be employed in carrying on the work. A new incentive to its prosecution is found in the fact that a counter line along the northern Chinese frontier is already well advanced in construction. The new Russian railway, when completed, will put Vladivostock, the naval station of the Czar's Empire on the Pacific, within 14 days of St. Petersburg and within 10 days of Odessa and Sebastopol.

The work on the improvements to the gun shop of the Watervliet, N. Y., arsenal are progressing nicely. The capacity of the plant will be increased about one-third by early autumn. It is thought Congress will make an appropriation soon for the construction of a 16-inch gun at Watervliet. This is the largest caliber in the world.

The Recent Development and Progress of Gun Manufacturing in the United States.—II*

BY W. H. JAQUES (LATE U. S. NAVY),

Ordnance Engineer of the Bethlehem Iron Company.

A variety of materials has been proposed and advocated for heavy gun construction, but steel, advocated by Whitworth and Krupp as early as 1860 and still employed by them, has vanquished all others in the race and seems likely to be retained for as long a period to come.

Armstrong accepted steel and breech loading with other early advocates, but abandoned the steel barrel in 1861 as being untrustworthy and difficult to produce; and substituted the very justly criticised wrought-iron coil. Although Armstrong was knighted for this wrought-iron coil breech loader, it was abandoned for a return to muzzle loading. The coil, which ought never to have been accepted, was retained while that feature which was a marked advance in artillery—breech loading—was abandoned. Captain Eardley-Wilmot considers this was not a retrograde step at the time, when guns were short and could be more conveniently loaded with simpler means, but thinks that England's fault was in returning to the system of muzzle loading, to which she reverted, after the introduction of slow-burning powder, which requires a long gun to utilize all its energy.

Whitworth and Krupp, however, stuck to steel and breech loading, and history has well indorsed and proved their foresight and judgment; and, although Great Britain waited a quarter of a century before she acknowledged Whitworth's supremacy in gun making, she has at last done so, and Mr. Gledhill's (Whitworth & Co.) type of gun and the material of which it is made stands in the front rank to-day.

Both branches of our Government use almost exclusively for their heavy guns fluid compressed hydraulic forged steel, and as they have become assured of the soundness of the material when produced in larger masses, have decreased the number of parts of the guns. For example, those of the 8 inch gun, numbering ten in 1887, to three parts in 1892.

In connection with gun construction it may be interesting to you to recall some of the earlier breech-loading guns, in order that you may recognize the progress that has been made. The original Armstrong gun contained practically nothing that has been retained, while the Whitworth gun, made in four parts, contained, with the exception of the mechanical shape of its bore, much that is in use to-day. It is made of steel, of few parts, and had great strength and high power. It is true it is a later design than the original Armstrong gun, but the earliest Whitworth guns were made of steel, were strong and had a very efficient wedge for closing the breech.

Passing from the Armstrong gun of 1861 to another of that famous establishment's productions 30 years later, we have for consideration the 110-ton breech-loading rifle, which, with 960 pounds of powder discharges a steel projectile weighing 1800 pounds. The British 110-ton guns, about which there has been so much discussion, are not only faulty in construction, but are composed of too many pieces, the chase hoops particularly being too numerous and short to be of any use in supplying the longitudinal support which the long tube requires. The original design has undergone two marked changes, substituting larger hoops, but even these were not of sufficient proportions to entirely remedy the defects of the separation of the remaining short hoops on the upper side caused by the dropping of the muzzle. The gun, even as it now exists, should not be imitated, and will not be by such gun factors as Whitworth and Bethlehem who possess the powerful appliances requisite for shaping, treating and assembling the few heavy parts that should make up guns, even of such heavy calibers. Whitworth's new 35 caliber 12 inch 50-ton breech loaders for the British War Office, composed of three pieces only, are but a precursor of as simple and strong a design for the heavier calibers. I desire to especially emphasize the causes of the mishaps to the British 110½-ton guns, because their failure does not convey to my mind any reflection upon the usefulness of such large calibers, for it is quite as simple for the steel works I have just named to construct a sound 110 ton gun as it is for smaller establishments to make a 1-pounder, and there can be no doubt that the more powerful the guns of a battleship are the more formidable an enemy she will be.

In my paper on the "Recent Progress in the Development of War Material in the United States," read at the annual meeting of the British Iron and Steel Institute, in London, in May, 1891, I referred to this question in the following words:

At the Institute's autumn meeting of 1886 Charles Markham said: "Rightly or wrongly the strong feeling generally prevailed that the manufacturer of our (British) guns was not worthy of the mechanical reputation of the country."

I deem the failures mechanical only, and if the guns are constructed in a manner equal to many of the modern marine engines that have been built in Great Britain, they will be equally efficient and serviceable.

The efficient service of these guns must not be compared directly with the number of rounds that can be fired from smaller calibers, but rather from the effective amount of destructive work that can be got out of them.

The tendency to substitute for the larger armament an increased number of guns of reduced caliber, notably of the rapid-fire class, will, no doubt, soon meet with a reaction, because of the loss of that powerful element of destruction, the shattering power so necessary in combat with heavily armored ships. A mixed battery of large and small guns is, no doubt, the most useful compromise—for what is a ship to-day other than a compromise—in fact, a combination of compromises?

Of other systems of gun construction and other material than forged steel recommended for trial within the last few years, may be mentioned the Woodbridge wire-wound guns of 10-inch caliber (employing longitudinal bars and soldered wire) for the army and 6-inch for the navy; the Crozier 10-inch wire wound guns (jacketed and hooped with steel castings); the Haskell multicharge gun; the 12 inch cast-iron mortar, and two 6-inch steel cast guns. Three of these have been tested and failed; viz., the two steel cast guns and the 12 inch cast-iron mortar. In December, 1888, the Bessemer steel cast gun went to pieces at the first round with a full charge, doing considerable damage to the proving ground. In February, 1889, the open-hearth steel gun was tested, the report of the trial stating that although the gun escaped rupture the test demonstrated, as calculated, that the service pressure, while less than 15 tons to the square inch, was too great for the elastic limit of the metal, and that the permanent enlargement of the bore was greater than could be admitted in a gun issued to service. The 12-inch cast iron mortar burst explosively and violently in October, 1889, on the twentieth round, and a long fought battle for cast iron was finally decided

Some of you will recall that a gun of the Woodbridge type, and one of the Haskell type, failed a few years ago, and although slow-burning powder has in a much simpler way supplied what the Lyman Haskell type was designed to accomplish, Congress authorized the construction of another gun, which is now being built from designs possessing a little less architectural beauty than the former.

In regard to the development of our industries for the supply of heavy ordnance a most satisfactory account can be rendered. In 1886 we had practically nothing. To-day steel for guns of any caliber can be supplied by the private steel industries of the nation, and two splendid gun factories have been built and equipped where the forgings can be quickly machined and assembled, and the guns rapidly fitted for service. Not only all this has been accomplished, but from the great establishment at Bethlehem alone (built up and equipped without any financial aid from the Government) the Government has received over 250 sets of gun forgings (including those of 13-inch caliber) and armor plates of 10½ inches and 14 inches thickness, whose resistance has astonished the world; while the Navy Department and our splendid shipyards depend almost solely upon it for shafting and other heavy forgings.

There are many to whom much credit is due for this splendid progress, many spokes of the wheel that is running so smoothly and successfully now, but most credit seems due to the organization of and encouragement given by Secretaries Chandler and Lincoln to the Gun Foundry Board appointed by President Arthur in 1883. This board after familiarizing itself with the situation at home, gleaned from the Old World all that was needed to frame recommendations adapted to our own resources and requirements.

Its suggestions were so comprehensive that we find the policies of the two departments to-day encompassed by them. This report and the subsequent legislation based thereon marked as distinct an era in the restoration of our prestige as producers of war material as the Registry bill just passed bids fair to record in the rehabilitation of our merchant marine.

Mr. Jaques showed the effect of modern steel projectiles when fired at high velocities against steel plates by reproducing the results of the test of a Bethlehem 11½-inch plate. These results have been surpassed, however, by the Bethlehem nickel steel "Harvey" 10½-inch plate, tested October 31, 1891, and by Bethlehem's 14-inch nickel-steel plate (representing the diagonal armor of the battle ships now building), which passed the ballistic test so splendidly recently at Indian Head. In describing the test, the New York *Sun* said:

"It was subjected to an unusually severe test—more severe, in fact, than the standard tests adopted by foreign countries. A 10-inch gun was used, the projectile weighing 500 pounds, with a powder charge of 140 pounds, giving a striking velocity of 1410 feet a second. None of the three shots fired succeeded in getting far enough into the plate to show the backing. All three shots rebounded, one of them back to the muzzle. The deepest penetration was 14 inches. One of the projectiles—an imported Firth—broke." It was perfectly uniform; there were no cracks, and not even a bolt or washer was started.

Recalling my reference to the fund of information which the press controls, the New York *Herald* of the 14th inst. informs us that "nickel steel for high-power cannon is the latest fad engaging the attention of the ordnance experts. The Naval Ordnance authorities have decided to build an experimental 8 inch gun made of this material. A contract will be entered into

*A lecture before the Naval Reserve Association.

with the Bethlehem Iron Work in a few days for the necessary forgings. These forgings are to contain about 3 per cent. of nickel, uniformly distributed through the mass. The physical characteristics of a gun made of this material, it is estimated, as a result of the armor plate trials, will be increased 15 per cent. over ordinary gun steel, thereby increasing the pressure limit to 20 tons, as against 15 tons fixed for the safety limit of guns made without the nickel alloy. A corresponding increase of 150 feet per second in velocity should follow, thus making the gun the most efficient ever built if it comes up to the calculations of the ordnance experts. It is the opinion of ordnance authorities that the time is not far distant when nickel alloy will be used as generally in gun construction as in the manufacture of armor plate."

Whether these predictions will be realized time alone can tell, but I have sufficient faith in the possibilities of such a gun to present your association with the first nickel-steel gun manufactured in the United States and as far as I know the second one ever constructed.

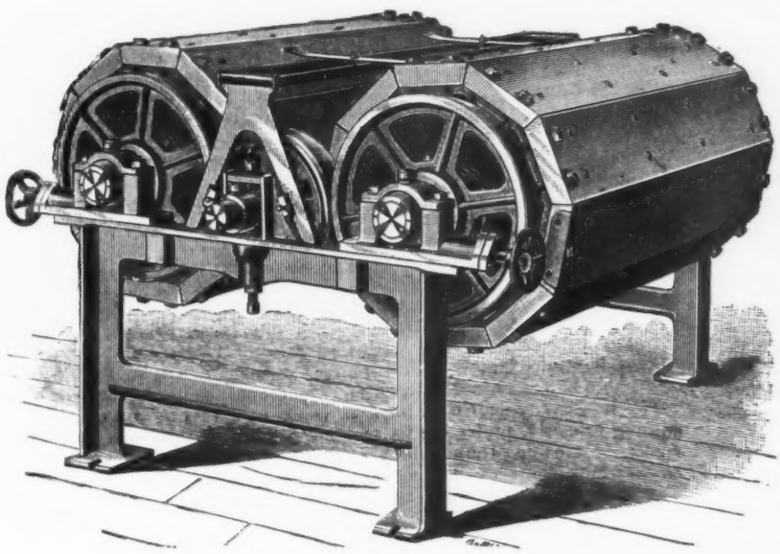
Mr. Hall of Messrs. Jessop's Works, in Sheffield, England, claims in 1888 to have made two barrels of a fowling piece of nickel steel, which Mr. Jessop had the confidence to use the following season, and stated in 1889 that he was constructing a piece of artillery of this metal which he would not hesitate to fire with full charges. Lieutenant-Colonel Hope of the British Royal Volunteers claims to have suggested the idea to Mr. Hall and to have supplied the nickel. Mr. Hall's gun is reported to have burst at the first round, the rupture being due to the absence of suitable transverse strength. Whether this was due to poor steel, poor construction or the presence of nickel was not stated.

At the close of his lecture Mr. Jaques threw upon the screen views showing the comparative sizes of the guns used by the Navy Department, with their projectiles and powder charges, commencing with the 1 pounder and finishing with the 16-inch 111½ ton gun, stating that Bethlehem had had the honor of supplying the steel for all these calibers up to and including the 13-inch. Up to the present time no 16-inch gun has yet been ordered. He supplemented these views with a table containing the details of all the naval guns, commencing with 4-inch.

The Reading coal-deal suits will be argued at Trenton, July 7.

The Smith Exhaust Tumbling Barrel.

The engraving shows an improved tumbling barrel made by the J. D. Smith Foundry Supply Company of Cincinnati, Ohio. The staves of the machine are made of 2-inch well-seasoned oak timber lined with hard steel plates. Each stave is so bolted that, no difference where the machine stops, the staves can be taken out and replaced without trouble. As soon as the sand is loosened from the castings and is pulverized sufficiently fine for the exhaust to lift it, it is immediately carried away to a box or receptacle, which may be placed at any point in or out of the mill room. This taking away the dust is where the saving of time in cleaning is accomplished. The barrels are operated by belt to the first one, the rest of the barrels being run by friction gearing. As many barrels as are needed can be placed side by side and operated by the same belt. Any one barrel can be stopped or started at will by turning the wheel handle shown in the cut, which raises or lowers the barrels from contact with the friction wheel. The barrels are made either octagonal or square in shape and of almost any desired size.



EXHAUST TUMBLING BARREL.

The new tug Penwood, a boat possessing some unusual and valuable features, was the subject of a thorough inspection when in this port recently. The boat was built by the Maryland Steel Company of Sparrow's Point, Md., and her general dimensions are as follows: Length, stem to rudder post, 101 feet; length over all, 106 feet; beam, molded, 21 feet; depth, molded, 12 feet; draft, coal in side bunkers, 10 feet aft. The engine is 12½ x 20½ x 34 by 24 inch stroke, and is fore and aft triple expansion. On the trial it developed 375 indicated horse-power. The boiler is 11 feet in diameter, 10 feet 3 inches long over head, and has a working pressure of 160 pounds. It is of the Scotch type, of open-hearth steel, and all holes are drilled and the rivets hydraulically driven. All the piping around the machinery is of copper or brass. The boat is supplied with a fire pump, 11 x 18 inch water cylinder, and will throw four streams or pump through two lines of 6 inch suction hose. The hull and deckhouse are of steel throughout. The boat is thoroughly lighted by electricity, and carries a Huntington search light on top of pilot house. The capacity of the bunkers is 57 tons; capacity of fresh-water tanks, 2000 gallons, and a complete outfit of suction hose and pipe for wrecking purposes is supplied. She carries a powerful steam capstan aft for working two lines and warping boat when necessary. Her machinery is of the most modern design for economical coal consumption. The engine has steam reversing gear, complete lubricating arrangements and water service through main bearings and slides, the pump which supplies this water also supplying the water-closet tank. Steam is supplied to heat the boat throughout. The living accommodations or general outfit compare favorably with first-class passenger steamers. The Penwood was built for and is owned by Joseph R. Ford Company, 11 South Gay street, Baltimore, Md.

The Iron and Steel Institute.

A full report of the proceedings of the recent London meeting of the Iron and Steel Institute comes to hand through the enterprise of the London *Ironmonger*. The meeting was held on Thursday and Friday, May 26 and 27, at the rooms of the Institution of Civil Engineers, 25 Great George street, Westminster. There was a large attendance of members and visitors. Sir Frederick Abel, the president, occupied the chair and delivered a most excellent address. A considerable part of it was devoted to a review of the progress made in the iron and steel industries since 1867, which was recalled by the recent death of the Duke of Devonshire, the first president of the Institute, who in that year had made a number of statements which have been completely overturned by the changes in the manufacture of iron and steel throughout the world. A considerable part of the address bore upon the remarkable progress made in the United States within that time, but the speaker hardly gives full credit to this country for the position which it now occupies among the iron producing countries of the world. His references to the progress of science in connection with problems in iron and steel making were very thorough and exceedingly interesting.

Among the new members elected as members of the Institute at this meeting were the following gentlemen from the United States: Henry D. Booth of the Midvale Steel Company, Philadelphia; Edward Livingston Ford of Youngstown, Ohio; Henry Denning Hibbard of the Taylor Iron and Steel Company, High Bridge, N. J., and William J. Taylor, iron and steel manufacturer, of High Bridge, N. J.

The Bessemer Medal was awarded to Arthur Cooper, general manager of the Northeastern Steel Company of Middlesborough. Mr. Cooper was born in 1849, served an apprenticeship in the locomotive workshops of the Midland Railway Company, subsequently acted as manager in the steel works of John Brown & Co. of Sheffield, then took charge of the steel department of Brown, Bailey & Dixon, where the manufacture of steel by the basic process was taken up under his direction, and in 1881 proceeded to construct the works of the Northeastern Steel Company, where the basic process has, under his management, achieved very great success.

At this meeting of the Institute considerable attention was paid to the basic steel question. A paper on "Experiments with Basic Steel" was read by W. H. White, Director of Naval Construction and Assistant Controller of the Royal Navy. His paper was very exhaustive, giving a great many tests of basic steel and showing that this steel was now receiving recognition in all classes of work requiring high-grade material. The discussion which followed the reading of Mr. White's paper was par-

ticipated in by a large number of the members of the Institute, and the general trend of the remarks made was in favor of the acceptance of basic steel for all purposes in competition with acid steel. Andrew Carnegie of this country was present at the meeting and stated that at his works there are now 14 open-hearth furnaces running constantly on basic steel, and an exhaustive series of tests which had just been undertaken by the Pennsylvania Railroad Company had not only placed basic steel alongside acid steel for boilers and fire boxes, but he was informed that the question was being seriously entertained whether it would be generally specified that nothing but basic steel should be used for those purposes.

A paper which attracted much attention was Col. H. Dyer's paper on the "Production of Pure Iron and Steel." He describes experiments which had been undertaken to produce iron and steel in the basic furnace. He said that although the results obtained have not absolutely solved the problem, they have approached so nearly to a satisfactory solution that there is every reason to hope that success is not far distant, and that pure iron and steel may thus be produced at a reasonable cost. In close connection with this subject was a paper describing "Experiments on the Elimination of Sulphur from Iron," by Edward J. Ball and Arthur Wingham. The discussion which followed the reading of these two papers brought out the fact that considerable uneasiness exists in the English iron trade from the continuous importation of Swedish high-grade iron in order to obtain pure materials for manufacturing crucible steel. It was stated that imports of Swedish iron into Great Britain now amount to £1,000,000 per annum, and it was hoped that this trade could be obtained by English works.

A paper by E. Reimers, director of the Grusonwerk, Madgeburg, on the "Manufacture and Application of Chilled Cast Iron by the Gruson System," attracted much attention. Samples were exhibited of chilled cast iron manufactured according to this process, and a large diagram was shown depicting a solid plate of a chilled cast-iron turret for two 15.7-inch guns. Mr. Reimers showed to what an enormous extent chilled iron by this process has been used for ordinary industrial purposes and for the manufacture of war material. He mentioned as an interesting fact that the manufacture of chilled cast iron is no longer absolutely dependent on charcoal iron, but can, with the help of chemical analyses and the testing machine, go its own way. A great many facts were stated showing the important results accomplished under this process, but chemical details were not given nor other data showing exactly how the chilled castings were made. They were, however, promised in a subsequent paper. In the discussion which followed the reading of this paper, the manufacturers present were not inclined to permit Mr. Reimers to claim entire credit for the results accomplished under the Gruson system. Facts were given to show that at a number of English works equally good results had been obtained long since.

Other papers read were as follows: "Platinum Pyrometers," by H. L. Callendar, fellow of Trinity College, Cambridge; "Notes on Fuel and Its Efficiency," by B. H. Thwaite; "A Practical Slide-Rule for Use in the Calculation of Furnace Charges," by Arthur Wingham; and "Valves for Gas Furnaces," by J. W. Wailes.

The announcement was made that the Institute had just completed, under the editorship of Sir Lowthian Bell, a special souvenir volume giving full details of the visit to America in 1890, which will shortly be distributed. The meeting was one of the most successful in the series held by the Institute. The autumn meeting of the Institute will be held in September, at Liverpool, but no date is yet fixed.

WORLD'S FAIR NOTES.

The Storm Damage.

The entire section of the north wall of the Manufactures Building between the center and the west pavilions was completely wrecked in the storm of the 13th. The wall was up to a hight of about 75 feet. The wind must have been coming at a tremendous velocity, for it hurled the wall in on the floor 100 feet or more. The floor went down beneath the weight of the massive timbers, which were piled upon it in a confused heap. The engineers who looked at it shook their heads gravely and said: "It's a bad wreck." The section that was swept down by the gale was completed to the roof line. It represented more than 100,000 feet of lumber. Massive hemlock columns that were thought to be strong enough to stand before any hurricane were snapped off like twigs. Other supporting columns were twisted out of shape and scattered over the floor in the wildest confusion. Large quantities of window glass in strong boxes were buried under the ruins.

Down in the center of the building a traveling derrick, 235 feet high, was securely anchored to the floor. This derrick is used to hoist the big steel trusses for the roof, each truss weighing 200 tons when in place. The gale tore the derrick from its fastenings and drove it 50 feet or more down the center of the building. It was on wheels, and fortunately did not topple over. One of the massive trusses half way up was twisted out of shape. No other damage resulted to the building.

Chief Burnham said, after inspecting the wreck, that the whole blame fell upon the contractor. "He has simply neglected to brace the building properly, preferring to take his chances of escaping those gales rather than go to the expense of bracing the building. This structure is just as carefully constructed as the other buildings, yet none of them were injured. They have come through all the storms because the contractors do not take any chances. They brace the walls before the interior supports are put in."

Cuba at the Fair.

Gen. J. R. West has made a report to the Secretary of the Treasury concerning his recent visit to Cuba, when he devoted much attention to matters pertaining to the exposition. The Captain-General of Cuba assured him that it was his desire that Cuba should be well represented at the exposition, and that he would do all he could to secure that end. Some valuable historical paintings, portraying the incidents in the Columbian era, will be displayed. The Marques de Apozteguia, the largest sugar planter on the island, the president of the Constitutional party and one of the most influential and energetic private individuals among the people, is alive to the situation of Cuba in regard to the exposition, and is personally taking a great interest in the efforts made to secure a good representation of the sugar industry. The cigar makers and manufacturers of fans, fancy articles, embroidery, &c., who find their best market in this country, are making good preparations.

Krupp's Guns.

Krupp, the celebrated German gun maker, is meeting with a good many difficulties in arranging for his exhibit at the fair. He expects to make the biggest show of his life, among the features of his display being one gun weighing 130 tons. It is impossible to get a derrick in New York big enough to lift this gun from the ship to the cars, and Krupp is not sure that even then the guns can be shipped on any freight cars in this country. He would have to spend $60,000 to build a derrick big enough to lift his guns from the vessels, and under these circumstances the big gun maker has about decided to ship the guns on his own cars, loading the cars in the largest freight steamers.

These cars are of the same gauge as American railways, and by sending them along Krupp expects to avoid the expense of building derricks at New York.

Russia's Extensive Exhibit.

Alexander Dobronitzky, imperial commissioner of the World's Fair from Russia, has sailed for Chicago to make final arrangements for the Russian exhibit. Mr. Timiriazeff, vice-president of the commission, has accepted the space assigned to Russia in the Fine Arts Building, and promises a number of masterpieces from the artists of that country. Ivanovski, a noted artist, wants to exhibit several of his best works, among them "The Landing of Columbus" and "The Discovery of America."

In the Transportation Department Russia will have a display of street cars, droskies, troikas, dooikas, carriages, carts, sleighs, canoes, railway engines, engines of the locomotive sort and vehicles of many forms, old and new. The marine section will have a large exhibit for transportation devices of all sorts, as also a full exhibit from the War Department. Large exhibits are also promised for the Forestry, Fisheries, agriculture and Mines Departments.

Brevities.

The Royal British World's Fair Commission has appointed a Photographic Committee, consisting of Captain Abney, Francis Cobb, James Dredge, G. Davison, Col. J. Gale, H. P. Robinson and Sir Henry Trueman Wood, to form a collection of photographs representative of the best work which is now being done in England, both by amateurs and professionals, for the Photographic Department of the forthcoming exposition. The pictures lent for this purpose will be transmitted to Chicago and taken back free of charge to the exhibitors; and the Royal Commission will also undertake their care while they are in the exposition. The committee proposes to send an invitation to a limited number of photographic artists, and hopes to be able to get together a collection which will be worthy of the present advanced condition of photographic art in England. Pictures will only be received from those to whom invitations have been addressed. In addition to the selected collection, there will be many photographs sent by exhibitors at their own cost, and for these space will be allotted in the usual way.

One of the most interesting exhibits in the Government Building at the World's Fair will be a display of arms, uniforms, tents and flags in use in the United States army at various times since 1776. This display is being prepared in one of the Gray's Ferry arsenal buildings. A space of 6000 square feet has been set aside for this exhibit. The uniforms will be draped upon lay figures and arranged in realistic attitudes. The one particular group in which especial pride is taken is to consist of seven figures on horseback, representing a general of the present army and staff. The central figure will be as nearly as possible an exact likeness of Major-General Schofield. All the articles were made entirely by Americans and of American materials.

The progress of shipbuilding from earliest times up to the present will be shown by a very extensive exhibit which will be made by Laird Bros., the big English shipbuilding firm at Birkenhead. The

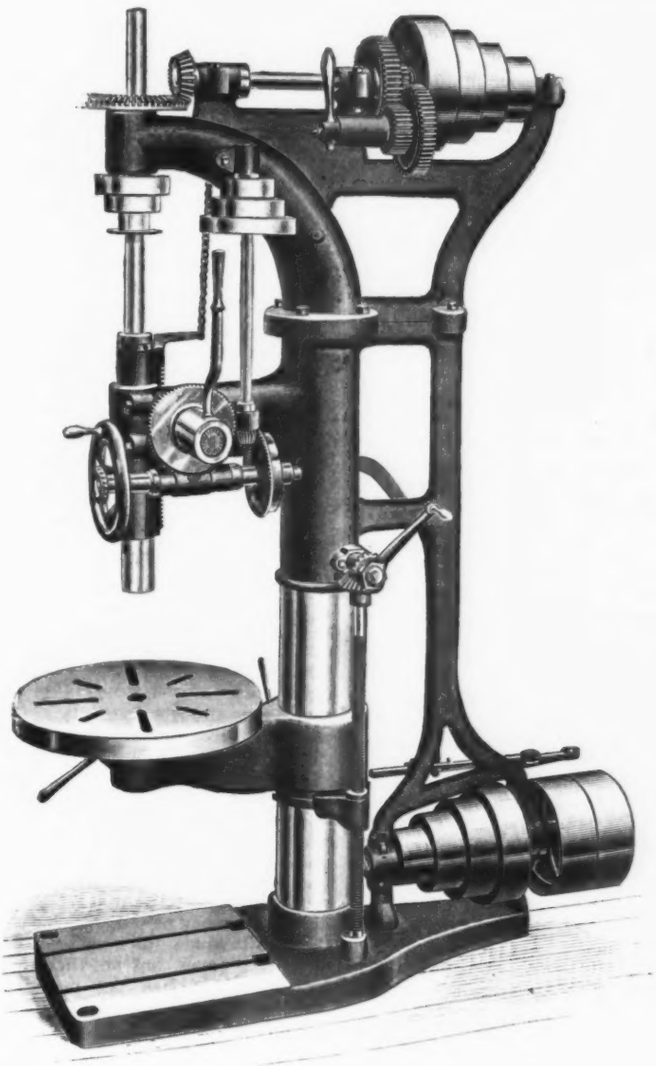
firm's exhibit of like character at the recent English Naval Exhibition attracted a great deal of attention.

In a private letter from Rome, received by Walker Fearn, announcement was made that Pope Leo intends sending to the exposition two celebrated geographical charts preserved in the Borgia museum of the Propaganda. One by an unknown author is traced with the first discoveries made in America four centuries ago, indicating the order in which they occurred. One of these charts, by order of Pope Alexander VI, was traced to the thirtieth degree of latitude, the line of division between Spain and Portugal, who were disputing for possession of the new lands. The other chart was executed in 1529 by Diego Ribero, and comprises the whole world known at the time, including those parts of America which had been explored.

Recent statistics which have come to hand in German periodicals give the following data relating to the zinc industry of Silesia. There are 23 zinc works, 6 sheet rolling mills and 1 zinc white works They worked 297,260 tons of calamine, 186,698 tons of blende, 894 tons of furnace scrap, 10,453 tons of oxide and dust and 225 tons of scrap, a total of 568,246 tons of material, the consumption of fuel being 878,815 tons. The production was 88,420 tons of spelter, the average value of which is 443.09 marks. The rolling mill had 14 melting furnaces, 5 heating furnaces, 8 single and 11 double mills, and used 38,922 tons of spelter, with a consumption of fuel of 41,788 tons. The product was 37,669 tons of sheets, the average value of which was 450.70 marks.

Upright Drill.

The 26-inch stationary head, back-geared and self-feed upright drill which we illustrate is designed for rapid, accurate and heavy work. The patent feed and quick return is of new design. A



UPRIGHT DRILL.

horizontal shaft is journaled in the head and has formed integrally with its inner end a pinion, constantly engaging the rack on the quill. This shaft is arranged above and at right angles to the worm and has mounted on its projecting portion a worm gear, which is secured on the shaft by a spline and groove, so as to rotate with it but have a limited endwise movement independent of it. This worm gear has a tubular hub which projects out beyond the end of the shaft and has its end closed by a cap. A radial lever passes through this hub and is fastened to the end of the shaft. This lever is used to slide the worm gear on its shaft and to engage it with or disengage it from the worm. In doing this the operator does not have to loosen the friction devices. This is also so when the tool is raised or lowered rapidly. The lever serves as a convenient lever to rotate the shaft without loss of time. It can be operated with one hand when the machine is in motion and the spindle raised and lowered the full length of the quill. The feed can be instantly changed, when the drill is running, from hand to self feed or self to hand feed, by turning the knob at the center of the front of the hand wheel to the right or left, as may be required. The patented screw device for operating the table enables the operator to raise or lower with ease to any desired hight. The bevel gears and pinion are nearly 2¼ to 1, which, without the back gears, affords the drill great power. The gears and racks are all cut from the solid and the spindle is balanced by weight and chains. The cones being the greatest distance apart possible, there is the advantage of having a long belt, which increases the power and lessens the wear of the belt.

These drills are made without back gears or self-feed when so desired, or with sliding heads. The makers are Sibley & Ware of South Bend, Ind.

Thomas Devlin & Co., National Hardware and Malleable Iron Works, Philadelphia, have lately been entering extensively into the manufacture of malleable steel castings for machine and other work. Malleable steel is found to be especially adapted for machine work, being stiffer than malleable iron, and wearing better for bearings, journals and other parts which are subject to more than ordinary friction. This material is also obtaining greater demand in the shape of fittings for steam, water and gas piping, and a considerable quantity of these goods in malleable steel are now being turned out in response to orders, in addition to those in malleable and cast iron. In the production of malleable steel the castings are recarbonized. The company are now prepared to build small experimental machinery to order, and are constantly adding to and filling out their staple lines of saddlery, carriage, builders', trunk and tinners' hardware, of which they produce a very full and high-class assortment. The works at Lehigh avenue, American and Third streets, Philadelphia, are very extensive and complete, the buildings covering a space of 252 x 250 feet, while ample space is available on the company's adjoining property for future extension of plant. The most noticeable feature of the establishment is the foundry, which is particularly efficient and well equipped. It is placed in a substantial building of 252 x 70 feet measurement, and gives employment to 90 molders. Two 54 inch beam cupolas are attached to the foundry, as well as an air furnace for treating the refined malleable iron. From 3000 to 4000 tons of pig iron are used here annually, the castings being generally of very small size, some of them the minutest articles ever produced in this manner, such as small strap buckles of which three or four would go to an ounce weight. A small brass foundry is also attached to the main building. For the malleable iron castings Western pig iron is exclusively used, while metal from the Pennsylvania furnaces with a small proportion of Western and Southern is used for other purposes. The company carry a very large amount of manufactured goods in stock, particularly in the lines of malleable and cast-iron fittings, as well as sash pulleys. The whole are very well arranged, with space economized judiciously in all parts. Workshops, storerooms and offices occupy a large four-story building fronting Lehigh avenue, while smaller buildings between it and the foundry contain engine and boiler house, five annealing furnaces, and the tinning, japanning and electro plating departments. The shops are admirably equipped in the way of machinery, a set of five machines

for drilling the holes in pulley wheels being especially noticeable on account of their ingenious construction and rapid work. Each machine operates upon eight wheels at once, and is capable, with the care of a single man, of turning out over 4000 pierced wheels a day. About 20 machines are in use for tapping fittings, some of them cutting three or four threads in one casting simultaneously by means of adjustable taps placed at different angles, and in many cases differing in size as well. In addition to the ordinary fittings they are turned out with English standard threads if required. The firm is composed of Thomas Devlin, president and general manager; William McGrath and Louis J. McGrath.

The Position of Spelter.

The *Ironmonger* prints the following editorial reviewing the influences at work in the European spelter market:

One of the anomalies of the hour, which is sorely exercising the minds of producers, more particularly in the Midlands, is the rising tendency of metals in the face of diminishing consumption. Commodities of nearly every other kind, and especially manufactured goods, have fallen heavily during the past six or eight months, but metals, on the contrary, have advanced. Chili bars have risen from £45. 17/6 in November last to something over £47. Straits tin, which was quoted £90. 6/3 six months ago, is now over £97. Even Scotch pig has recovered a few points from its March minimum. Lead is the only metal which has gone back, and that reaction appears to be of a temporary character. On the other hand, manufactured iron, brass and copper are all cheaper, as might naturally be expected from the general slackness of demand and the special curtailment of consumption in Durham, South Wales and other places where trade is affected by strikes and labor disputes. Perhaps the greatest anomaly, however, is that furnished by the position of spelter, which enters so largely into the composition of brass and galvanized iron. But a few months ago this metal might be described almost as "a drug in the market" at the low price of £21. 10/. It is now scarce at £23. 7/6 in Birmingham for English and £23. 12/6 for Silesian. Yet the consuming trades upon which spelter is dependent were probably never in a more depressed condition. In all these cases, doubtless, combinations and speculative influences go a long way to explain the discrepancy between business and prices, but Midland consumers confess themselves fairly puzzled by the course of spelter, and the subject has lately given rise to a rather voluminous correspondence in the Birmingham papers. Consumers complain not only that prices have risen out of all proportion to market requirements, but that they cannot obtain the metal even at quoted prices. The London market quotations, they say, are misleading. There is always a difference of 12 shillings 6 pence per ton between London and Birmingham delivery, to cover the cost of carriage, but even when this difference is allowed for, they say, the actual price of the metal is from 5 shillings to 7 shillings 6 pence above that quoted in the market reports. In other words, they charge the London dealers with endeavoring to "bear" the market for their own ends. This is a subordinate matter which the London and Birmingham metal houses may be left to settle between them; but it is of real importance to the trade to know what are the causes of the artificial dearness of spelter, and whether it is likely to continue. On this point all that can be positively affirmed is that an agreement was entered into some time back by the principal European producers to limit the production of spelter to the quantity produced in 1884 plus 15 per cent., and that the Rhenish and Silesian producers have concluded among themselves a separate agreement to sell no spelter under £23. 12/6, delivered in Birmingham Under cover of this arrangement. the Belgian and British smelters have been able to raise their price to within 5 shillings of the German minimum without losing any of their trade. The all-important question for consumers, and especially galvanizers, is, Will this high price last? Will the Silesian producers adhere to their resolution to sell nothing under £23. 12/6 in Birmingham; and if so, is there any reasonable prospect of obtaining supplies elsewhere?

On these several points the information at present forthcoming is by no means reassuring. The Silesian agreement for a minimum price is made for six months at a time, and it expires at the end of next month. If the supplies of Belgian and British spelter were adequate to the requirements of the English market, the Silesian producers could hardly be expected to adhere to a minimum which must give the virtual monopoly of our trade to their competitors. But experience has shown that even in these dull times we cannot get on without a certain quantity of Silesian spelter, and that quantity must increase as trade revives and British supplies become exhausted. It is by no means certain, then, that the Silesian spelter producers will abandon this minimum. It might pay them better to do a small trade at a high price than a large business at a lower figure, more especially as the reputation of their metal stands high, and they have a practical monopoly of their own market. If the minimum agreement is renewed next month, it will govern the price of spelter till the end of the year, unless, indeed, the Americans, who have lately been sending some experimental consignments to this country, can see their way to increase their output and to undersell the British and Continental producers. Midland consumers are now discussing the practicability of a counter combination among themselves to produce the spelter needed for their own requirements, so as to be independent of foreign "rings," and though there are unquestionably great difficulties in the realization of such a scheme, the contingency is one which neither foreign nor British smelters can afford to leave out of account.

The many discussions now going on in Pittsburgh between the manufacturers and the officials of the Amalgamated Association are resulting in a number of statements being made by employees which are strongly denied by the manufacturers. A case in point is that made by a mill worker, who is also a prominent official of the Amalgamated Association, in an interview with a representative of the *Pittsburgh Dispatch*. This statement has been denied by Frank E. Richardson, secretary of the Pittsburgh Forge and Iron Company, in a letter addressed to the *Pittsburgh Dispatch*, which reads as follows: "In an interview published in this morning's issue of your paper, Mr. Edward A. Keil, treasurer of the Amalgamated Association is quoted as saying that under the scale of wages proposed by the iron manufacturers, to take effect July 1, 1892, his wages will be cut down to $4.50 per day. I have taken the trouble to look over the books of the Pittsburgh Forge and Iron Company, where Mr. Keil is employed, and find that from January 9 to April 30 of the present year the average product of his furnace was 11 $\frac{9}{16}$ tons per turn, for which he received 70 cents per ton or $8.33 per turn or day. The same average product, at the rate of wages proposed in the manufacturers' scale would give Mr. Keil the sum of $5.95 per day instead of $4.50 as stated by him in the interview."

The Vanderbilt Bronze Doors.

The great bronze doors for the residence of William K. Vanderbilt, at Newport, designed by Richard M. Hunt, were recently completed by John Williams, whose works are at 544 to 556 West Twenty-Seventh street, this city. These doors are magnificent specimens of grille work, far surpassing anything of like character hitherto attempted in this country. It is further asserted by those who claim to be in a position to known that nothing so elaborate has been done in Europe in the last 25 years. There are really two grilles, the exterior one being of bronze and the interior of forged steel. The ornamentation of the exterior is duplicated on the interior. As these grilles form the entrance doors to the house, heavy plate glass will be placed between the bronze exterior and the forged steel interior, thus making a weather-tight door.

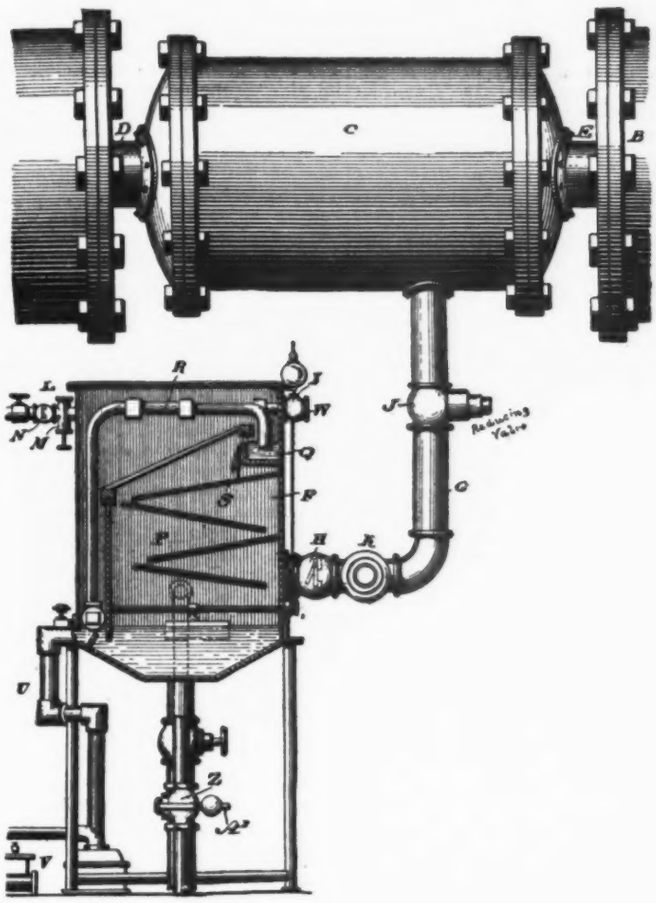
The plan comprises four panels, two stationary on the outside and the two next the center forming the doors. The hight from the floor to the top of the metal work is 16 feet, and the breadth over all is 25 feet 4 inches. The doors are 10 feet 8 inches high and each opens 6 feet, making a total opening of 12 feet. The chief lines in the work are vertical, thus giving an effect of greater hight. Six tons of bronze and 8 of steel were used in the construction of these grilles, but finished down to about 10 tons. The doors themselves weigh 1½ tons each, but have been so nicely poised that they can be swung with a touch of the finger. They were set on pivots, as the weight precluded the use of hinges. Notwithstanding these details as to weight, there is no sense of massiveness in the work. Even the four columns surmounted by Corinthian capitals are in open work. Each door is so designed that nearly the whole of its reverse side will be covered by a single huge plate of glass. A bronze frame to hold the glass is hinged to the door on the side near the door post. Outside of this frame is again hinged a steel duplicate of the bronze work of the door itself. When all are opened they are like the leaves of a book, but when closed the door appears as a solid structure. These doors are fitted so nicely that when closed the crack between them will admit the edge of a single leaf of writing paper, but not the thickness of two leaves. When put permanently in place, however, they will not be set so close together.

As before stated, the chief lines of the plane are vertical. Over the two doors are lions' heads with lions' skins and claws in festoons. In the center of each door are the initials "W. V.," in monogram. In the center of each side panel is a conventional child's head surrounded by rays. The top panels are elaborated with leaf work and scroll work of most artistic design. The leaf work is of a character which would only be attempted by the most skilled workmen. Designs were first made in iron, wrought by hand into the proper shape, with long, curving fronds and leaf edges waved and turned in different directions. Very thin patterns were thus secured. From these patterns the bronze castings were afterward made, which are so exquisitely turned and so delicate in appearance as to excite the admiration of art connoisseurs. The bronze front will be finished in verd-antique. The steel in the rear will receive a gun-barrel finish. Soft steel was selected for this work in place of iron in order to secure the beautiful polish of which that metal is capable. It was all forged to pattern, the

workmen displaying remarkab'e skill in so precisely duplicating the bronze castings of the outside doors. The total cost of these grilles is about $40,000, and $10,000 more will be paid for a bronze railing and ten large candelabra to be placed along the terrace on the approaches to the doorway. This superb piece of work was executed under the special direction of H. B. Stillman, interested in the firm, who has immediate charge of the iron department.

The Webster Feed-Water Heater.

The feed-water heater, of which an engraving is here presented, is made by Warren Webster & Co., 491 North Third street, Philadelphia. The first one of them put in practical operation was a 500 horse-power, used in connection with a pair of compound engines at the works of W. F. & F. C. Sayles, Saylesville, R. I. The second, of the same size, was furnished upon trial to the Merrick Thread Company of Holyoke. A series of experiments was made by Samuel M. Green, the mechanical superintendent of the company, who found the results sufficient, in his estimation, to permit the adoption of the heater in connection with their plant.



THE WEBSTER FEED-WATER HEATER

Reference now being had to the drawing, C is a steam receiver placed between the cylinders of a compound engine of the usual form. A feed-water heater and purifier is shown, F, with a pipe, G, communicating with the receiver. This pipe is provided with a check valve, H, for preventing the water which is in the heater from entering the receiver through the branch pipe, which might occur under certain conditions, and J and K are pressure-reducing valves of any ordinary construction for lessening the pressure of the steam from the receiver C before it enters the heater. The heater is provided with an air-outlet pipe, L, having an automatically operated air-inlet valve, M, of usual construction, and a check valve, N. The heater has a vacuum chamber, P, in which the steam enters from the pipe G, a trough, Q, which receives the inlet water from the pipes R, and the inclined perforated plates S, over and through which the water passes while falling through the trough, in which the supply pipes empty. A discharge pipe, U, conveys the feed water from the heater to the pump V.

It is usual in heating feed water in connection with a compound engine to pass the exhaust steam from the last cylinder through a coil heater to a condenser, where, owing to the vacuum which is there maintained, the exhaust steam is withdrawn and reduced in pressure to such an extent that it is not practical to heat the feed water, which is taken from a hot well at a temperature of about 100° to over 140°, when it is passed into the boiler.

By the device here shown, steam of less pressure than that carried in the steam receiver is utilized, and the maximum amount of water is heated by the minimum amount of steam, the same being reduced by either or both of the valves J and K, as desired. The air in the heater escapes by the outlet pipe L, the check valve N preventing its return, unless the vacuum is too great, when the automatically-operating inlet air valve M, which can be weighted to any desired extent, will admit the required amount. The water-inlet pipe W, which supplies the pipes R, is provided with an automatically-operating valve X, operated by the movement of a float and connected mechanism of usual form.

As the heater receives the steam from the receiver, a constant supply may be readily furnished to the pipe G, and thus to the heater, and, owing to the reducing valves, at any desired pressure.

The object in this design is to take the water from the hot well or other usual source, or if there is a coil heater between the last cylinder and the condenser to take the water from that at the maximum temperature which can be obtained and feed it into the water inlet W of the drawing, whether upon the top or side, the manner in which it enters being immaterial. Then to heat it to a higher temperature by steam from the steam receiver after a portion of the energy of the steam has been utilized in the steam cylinders from the time it left the steam boilers under full pressure before it entered the steam receiver. From the steam receiver is taken just the quantity of steam which is sufficient to heat the feed water to 210° or 212°. To accomplish this is used the branch pipe G, with a pressure reducing valve located in it from the steam receiver to the vacuum heater, and by this the pressure is cut in the steam pipe leading from the reducing valve into the vacuum heater to as near steam at 212° or atmospheric pressure as possible, since steam at atmospheric pressure contains a greater number of latent heat-units to accomplish the desired object, which is to heat the water more economically than if the full steam pressure carried in the steam receiver were carried in the vacuum heater on account of the vacuum heater, which may be made in any form of a tank, so long as there is no opening to the atmosphere. The pump, which is ordinarily connected to the heater, would not then operate satisfactorily on account of fluctuation of vacuum. To overcome this objection the air inlet or vacuum valve M is used so as to communicate with the inside of the vacuum heater, and by which it is possible to allow a proper amount of air to enter by setting the valve to any degree of vacuum desired.

An overflow pipe, Y, of larger diameter than the water supply pipe W, leads from the heater, so as to prevent the water from accumulating beyond a given or indicated level. The overflow pipe Y is provided with a valve, Z, having a lever, A', which is weighted so as to close the valve to prevent air from entering the heater in case of a partial vacuum at any time, but adapted to open it when the pressure in the heater exceeds a desired amount.

Annealing Tool Steel.

It was noticed, during a recent visit to the works of D. Saunders' Sons, Yonkers, N. Y., that the machines cutting steel were run at an unusually rapid rate. Why this was possible was explained to be due to the very perfect and thorough method of annealing they followed. All steel to be made into cutting tools or dies is heated in a coke oven to a red and then the bars are removed and placed in a second oven. The latter consists merely of a small brick chamber in which the heated bars are placed, the bars being arranged in layers separated by charcoal. The chamber is then closed and the bars allowed to remain undisturbed until perfectly cool. The result is that the steel is softened as much as it is possible to soften it and is of the same character throughout. In addition to this, the system has been found to better the quality of steel and to enable the tool after tempering to do better work.

At the conference held in Pittsburgh on Friday between the conference committees of the Iron and Steel Sheet Manufacturers' Association and the Amalgamated Association we are advised that the best of feeling prevailed between the two committees, and the chances for an early settlement of the sheet mill scale to the entire satisfac-

tion of both sides are said to be excellent. In the scale proposed by the Iron and Steel Sheet Manufacturers' Association there is no reduction whatever in wages paid for rolling, heating, roughing, catching, pair heating, matching and doubling. The only reduction is in the wages of the shearmen, and the request has been made by the manufacturers that wages paid to shearmen be reduced, for the reason that on account of the improved squaring shears put on the market recently the workman is enabled to turn out a much larger output. Another request contained in the scale presented by the manufacturers is that all mills working three turns be operated eight hours each turn, or as nearly that number as possible. Heretofore mills working the eight-hour turn have only been operated from four to five hours, to the great detriment of the manufacturers, and they have asked the Amalgamated Association to remove the restrictions regarding time of operating the mills, and in the future desire that all mills be operated to as full time as possible. Regarding the reductions proposed to be made on wages paid to shearmen it is stated that average wages under the scale proposed will amount to from $3.75 to $5.25 per day to men working jaw or crocodile shears, and additional labor about the shears will be paid for by the manufacturers. As stated above, there is every reason to believe that an early settlement of the sheet mill scale will be made. Another meeting between the two conference committees representing the Amalgamated Association and the Iron and Steel Sheet Manufacturers' Association was held in Pittsburgh on Tuesday evening, the 21st inst., at 7.30 p.m.

The Whiteside Pulley Covering Process.

Whiteside & Engelmann of Philadelphia, who have recently removed their establishment from 51 North Sixth street to 150 North Fourth street, inform us that they are meeting with success in the introduction of their Whiteside pulley covering process, which they have supplied to a great number of establishments, particularly in Philadelphia and its vicinity; including, among others, Henry Disston & Sons' Saw Works, Spreckles' Sugar Refinery, Pennsylvania Railroad Company, Bushill Iron Works, &c. The pulleys, whether of iron, steel or wood, are covered with a chemical process the invention of Beatty C. Whiteside, which prevents slipping of the belts and consequent loss of power and effectiveness, which is the case where bright polished pulleys are used. It also obviates the necessity of keeping the belting at an excessive tension, which strains the shafting and heats and wears the journals, besides wearing out the belting itself very rapidly. The alternative practice of using resin or thick oils and pastes is said to either harden or rot the leather. It is now just over five years since the system was first introduced, so it may be said to have had a fair trial.

A corps of engineers is out prospecting for a new pipe line to be laid from the Pennsylvania and New York oil fields through Delaware, Sullivan and Orange counties, N. Y., to Newburg, N. Y., as its seaboard terminal. The organization back of it is said to be composed of English capitalists. Agents are at work buying the right of way through Delaware County. The new company are headed by the Pittsburgh banker, W. L. Mellon, who has associated with him a number of prominent oil men. The engineering corps is in charge of Charles H. Rathbone. A pumping station will probably be located at Hancock, that place offering good railroad facilities. The plan, if carried out as contemplated, would make Newburg an important distributing point, and extensive works would be established there.

Wage Conferences at Pittsburgh.

During last week a number of conferences between the Conference Committee of the Amalgamated Association of Iron and Steel Workers and the manufacturers of Pittsburgh and Mahoning and Shenango valleys were held in that city. The wage scale for 1892-93, as prepared by the Amalgamated Association, and the scale for the same period formulated by a number of the Pittsburgh manufacturers, and the Mahoning and Shenango valleys scales, as printed several weeks ago, were under discussion. As we announced last week, the first conference was held between a number of the Pittsburgh manufacturers and the Conference Committee of the Amalgamated Association, in the Ferguson Building, Pittsburgh, at 2 p.m. on Wednesday, the 15th inst. At this meeting the Amalgamated scale was presented to the manufacturers, while the manufacturers in turn presented to the Amalgamated Association the scale prepared by Pittsburgh and which we present elsewhere in this issue.

Among the Pittsburgh manufacturers represented at this conference were Jones & Laughlins, Limited, by Henry A. Laughlin; Zug & Co., Limited, by Charles T. Zug; Lindsay & McCutcheon, by James McCutcheon; Lockhart Iron & Steel Company, by T. J. Gillespie; Oliver Iron & Steel Company, by D. B. Oliver; and also a number of other prominent concerns. The Amalgamated Association was represented by William Weihe, president; M. M. Garland, vice-president; Edward F. Keil, treasurer, and a few of the other prominent officials. A long discussion was had over the respective scales, but no definite action was taken. The Pittsburgh manufacturers presented their case very strongly, showing the representatives of the Amalgamated Association that at the time the scale now in force was prepared prices were much higher than they are at present. They stated that it was unreasonable to continue a scale based on bar iron at 2¢ per pound, when it had been selling for a long time at 1.50¢ per pound and even less. It was also brought out by the manufacturers that for the past four or five years extensive improvements had been made at different plants which permitted a larger output, the fruits of which were shared entirely by the workers. These improvements represented a large outlay of money, and the manufacturers feel that they are entitled to at least a share of the benefits derived from these improvements and additions. These arguments of the manufacturers were replied to by the Amalgamated Association officials, who stated that they were unable to see how a reduction in wages would be of any benefit to the manufacturers, as such reductions would undoubtedly be shared almost entirely by consumers. The impression gathered from the statements of the labor officials would seem to indicate that they are prepared to enforce the demands made in their scales, and are prepared to go on a long strike if necessary. After a session lasting several hours the conference adjourned, the manufacturers requesting that they be allowed the privilege of attending the convention of the Amalgamated Association and defining their side of the case to the delegates in attendance. This request was laid before the Amalgamated Association delegates on Thursday morning, with the result that a number of the manufacturers appeared in the convention hall on Friday afternoon, and several addresses were made, in which the position of the manufacturers was clearly set forth and reasons given as to why the workers should accede to a reduction in their wages. The arguments of the manufacturers were listened to very attentively, but no indications were given as to whether the men will agree to accept a reduction in the scale or not. Another conference between Pittsburgh iron manufacturers and the officials of the Amalgamated Association will undoubtedly be held during the present week.

The manufacturers of the Mahoning and Shenango valleys and the Cleveland district endeavored to get the consent of the officials of the Amalgamated Association to meet them either in Youngstown or Cleveland. This request was refused, and as a result a large number of the bar iron makers in the two valleys and the Cleveland district met the Conference Committee of the Amalgamated Association in the Ferguson Building, Pittsburgh, on Thursday afternoon, the 16th inst., at 2 o'clock. The same proceedings as characterized the meeting of the day before were gone over and strong arguments were made by both manufacturers and workmen in an endeavor to show that the position taken by each was justified by existing circumstances. The conference lasted about two hours and an adjournment was then had, with the understanding that the manufacturers and the Amalgamated Association Conference Committee meet in Youngstown, Ohio, during the present week.

On Friday afternoon at 2 p.m. the Conference Committee of the Amalgamated Association met the Wage Committee representing the Iron and Steel Sheet Manufacturers' Association in the office of that organization, in room 710 *Times* Building, and the meeting was in session from 2 p.m. on Friday until about 1 a.m. on Saturday morning. The manufacturers were represented by J. G. Batelle of the Piqua Rolling Mill Company of Piqua, Ohio; W. T. Graham of the Standard Iron Company of Bridgeport, Ohio; B. M. Caldwell of the Ætna Iron and Steel Company of Bridgeport, Ohio; Geo. G. McMurtry of the Apollo Iron and Steel Company, Pittsburgh, Pa.; W. C. Cronemeyer of the United States Iron and Tin Plate Mfg. Company, Demmler, Pa.; Wm. Banfield of Wallace, Banfield & Co., Limited, Irondale, Pa.; B. F. Jennings of Jennings Brothers & Co., Limited, Pittsburgh, Pa.; Warner Armes of Falcon Iron and Nail Company, Niles, Ohio, and John Jarrett, secretary of the Iron and Steel Sheet Manufacturers' Association. As stated above, this conference was in session for about ten hours, and the whole situation regarding the sheet industry was gone over carefully by both sides. It is stated on good authority, that the steel sheet scale will be arranged with less difficulty than any of the other scales now up for settlement. The manufacturers, through their secretary, made a lengthy statement showing the great difference in cost in producing black sheets in this country for tinning purposes as compared with wages paid abroad, and the impression was that the Amalgamated Association would agree to make some reductions in the sheet mill scale. As in the case of the bar iron makers another conference between committee of the Amalgamated Association and the Iron and Steel Sheet Manufacturers' Association will be held in Pittsburgh during the present week.

Regarding the new scales prepared by the Carnegie Steel Company, Limited, for their Homestead Steel Works, and which were printed in *The Iron Age* of last week, there are no new developments. The firm have stated that the new scale must be signed on or before the 24th inst., and as yet no move has been made by the workers looking to the signing of the scales. The Homestead scales were up for discussion in the conference of the Amalgamated Association last week, but just what action

will be taken on these scales cannot be stated at this time. The reductions proposed are quite large, but in view of the large additions made to the equipment of the Homestead Steel Works, which permit a greatly increased output, the large reductions are not so large as would appear at first glance. The firm have announced that they are in readiness to meet a conference committee appointed by their men at any time, in order that the new scales may be discussed by the firm and the men. As yet no request for such a conference has been made by the men, but a meeting during the present week will probably take place. Much has been printed in the daily press regarding the labor situation at Homestead which is untruthful and is calculated to do much harm by preventing a peaceful settlement of the wage scale. Several conflicts have taken place between the workmen at the Homestead Steel Works and watchmen employed by the Pittsburgh, Virginia & Charleston Railroad, whose line passes through property on which is located the Homestead Steel Works. This has already caused a bitter feeling between the workmen and the railroad. In all probability definite action will be taken this week looking to a settlement one way or the other of the new three-year scale as prepared by the Carnegie Steel Company, Limited.

The labor situation in Pittsburgh at the present time is certainly in a very precarious condition. The great differences existing between the scales as made up by the Amalgamated Association and those of the manufacturers would seem to indicate that liberal concessions must be made by one side or the other if a peaceful settlement is to be reached. Of course it is well to understand that all the scales now in force do not expire until the last day of this month, which still allows sufficient time for a settlement to be arrived at without recourse to a strike. If such is not to be the case, however, it is necessary that action be taken looking to such a settlement within a very short time. In certain quarters it is the impression that a settlement of the difficulties now surrounding the labor situation will not be had until some time during the latter part of July. The reasons advanced for this are that all mills making both bar iron and steel will be closed down during the first two weeks of July by request of the Amalgamated Association. This idleness of the mills will be seized upon by the manufacturers as a good time to make necessary annual repairs, and with many of the mills a longer time than two weeks will be required to do this work. As soon as these repairs have been made and the mills are ready to start up again, negotiations will probably be opened up between the different firms and the Amalgamated Association looking to a settlement of the wage scale. While this is the opinion of many in the trade, others think that a compromise between the Amalgamated Association and the manufacturers may be reached, and a hint is thrown out that a compromise scale, based on $5 per ton boiling on a 2 cent card, with other proportionate reductions, is among the possibilities. However, this is merely guessing at what will occur. Important developments will no doubt be reached during the present week.

A mass meeting of the citizens and workmen employed in the Homestead Steel Works of Carnegie, Phipps & Co , Limited, was held on Sunday, the 19th inst. Addresses were made by T. H. McAvoy of Youngstown, Ohio; Wm. Carney, vice-president of the Amalgamated Association; J. C. Kilgallon, assistant secretary, and several other minor officials. The speakers reviewed the situation at Homestead thoroughly, and particular stress was laid on the statement made by Carnegie, Phipps & Co , Limited, that the scale presented by them was in the nature of an ultimatum, from which they would not recede. The speakers counseled the workmen that in case of a strike earnest efforts should be made to preserve peace and order at all times. The sentiment was very strongly expressed at this meeting that the new scale as proposed by the firm was unfair in many respects, and would not be accepted by the workmen without a struggle. Arrangements were made for another meeting to be held in the same place on Wednesday, the 22d inst.

Lake Trade with the Seaboard.

Year by year, as the population of the United States increases and its resources are developed, the volume of internal and external trade is proportionately swollen. The following figures, showing the comparative storage capacity of grain elevators at lake and seaboard ports, have a very pertinent and direct bearing upon the movement and distribution of breadstuffs exported from Atlantic ports:

Lake Ports.

	Bushels.	Per cent.
Buffalo	14,660,000	17.58
Chicago	30,075,000	36.07
Detroit	3,100,000	3.72
Duluth	20,950,000	25.13
Erie	600,000	0.72
Fairport	1,000,000	1.20
Milwaukee	5,630,000	6.75
Toledo	7,357,000	8.83
Totals	83,372,000	100.00

Seaboard.

Baltimore	5,850,000	14.47
Boston	2,700,000	6.67
Newport News	1,750,000	4.33
New York	26,200,000	64.82
Philadelphia	3,925,000	9.71
Totals	140,425,000	100.00

Philadelphia papers make use of this showing as an argument in favor of enlarging elevator facilities at Erie, in hopes of intercepting the trade via Buffalo and the Erie Canal. New York, it will be observed, is not unmindful of her opportunities.

Again the announcement is made that the blast furnace operators in the Mahoning and Shenango valleys have decided to embark in the manufacture of coke to be used in their blast furnaces. A meeting of several of the valley operators was held in Pittsburgh last week and steps were taken looking to the consummation of this project. It is understood that a large tract of coal land in the Connellsville region has been secured and as soon as the necessary details have been arranged work on the erection of the ovens will be commenced.

Harry L. Tyler of Corning, N.Y., has just been granted a patent for an electric current alternation, which is said to possess many new and novel features. The device is intended to alternate a continuous current in any desired portion of its circuit, and it is said to perform its work successfully. When run in connection with a continuous current generator, the generator will deliver an alternating current and yet the current in the field portion of the circuit remains continuous. The advantages of such a combination over the ordinary alternating apparatus are readily apparent. It is not necessary to vary the speed or output of the generator in order to increase or diminish the number of alternations per second. The machine is very small, requires about ¼ horsepower to drive it, and can be made to produce over 10,000 alternations per second when running at a comparatively slow speed. This invention is also likely to prove useful in car propulsion. The current of extremely low pressure can be taken from the rail, run through the alternator, on the car, and transformed into a higher potential in the motor circuit, thus dispensing with the overhead trolley.

San Francisco News.

As the year progresses and the spring season comes to an end there has not been that improvement in general business that people would like. The Clearing House exchanges, that unfailing barometer of the financial world, show plainly that we are still behind 1891 as far as the volume of business is concerned. Not, however, so much as many think. From 7½ to 10 per cent. has been the figure for several weeks of late. The falling off since the first of the year has been as nearly as possible 10 per cent , the clearances for the first five months of the year being in 1891 $355,421,356; for the same time this year, $319,976,056. It should be borne in mind, however, that a good deal of the falling off here noted is due to the lessened operations on the mining stock exchanges, and that the 10 per cent. shown by the comparison is not all due to merchandise. If we put 6 per cent. for that it will be probably near the truth. In all this the hardware and iron trades on the whole have borne their share. We must, however, except agricultural implements, which, owing to the great breadth of land under crop and the good prospects of the harvest, have been in unusually good demand. The general hardware trade has been moderately active during the past two weeks. The trade in building hardware has been rather slow on account of the lessened building activity, though in this matter there are better prospects than have hitherto prevailed. The farmers throughout the country being now engaged in the work of harvesting in many places, and preparing for it in others, it may be expected that country demand for hardware will be light for a while. Bar iron still continues to be offered at $2.35 as a very low figure. The market, however, is still quiet and for a month or so likely to so remain. The fall business will, undoubtedly, be good in every line, and especially in hardware and metals. The putting on of a new line of clippers by J. W. Grace & Co., and the promise of another by Balfour, Guthrie & Co., will help considerably to solve the transportation problem, especially in articles of steel and iron. Usually it does not matter much whether an invoice of hardware, iron, &c., takes four weeks or four months on the trip, although rapid transit is desirable, other things being equal, and the difference between $7 per ton and $15 to $30 per ton is so great that the sail route will be preferred by all means. At present there are 25 vessels on the way to this port from New York and Philadelphia, or loading, and we understand that the number will be quickly augmented. This will help to make this city the headquarters for the coast in the matter of iron, hardware, steel, wire, agricultural machinery, &c. As the difference between ocean and rail freight would make up a great deal of heavy local charges, in this way the solution of the transportation problem may be nearer than expected, and San Francisco may effect her deliverance from the thraldom of steamship and railroad.

Since my last letter the Fulton Iron Works, one of the leading foundries of the city, has been totally destroyed by fire. This happened on the morning of Sunday, May 29. The cause is unknown. The loss is given by the proprietors, Hinckley, Spears & Hays, at $300,000, with only $70,000 of insurance. The foundry was one of the oldest and best appointed in the city, and had only just accepted a contract for the building of a large tug. The proprietors are enterprising and will be at work again ere long.

I have in a previous letter referred to the magnificent steamer Peru, being built for the Pacific Mail Company by the Union Iron Works of this city. She was launched on Saturday midnight, to take advantage of the tide, and is the largest commercial vessel ever turned out from San Francisco's great shipyard. The steel plates in the hull and the boilers were imported from the East, but everything else about her is the product of Pacific Coast labor. In a couple of years we will have steel works, when it will not be necessary to send East for ship plates. We have previously given the dimensions, &c., of the Peru, so that it is not necessary to revert to the matter here again. The quickness with which this steamer was built indicates that the building of a fleet of large steamers, such as has been proposed for the Cape Horn route between here and Europe, would be a matter of commendable dispatch, and would greatly benefit an important home industry and solve the transportation problem for good and all.

Although hardly in the proper sense trade news, still the robbery of the men carrying the money to pay the employees of the Judson Iron Works at Emeyville deserves a passing notice. The sum taken was $16,000. The robbery occurred near Berkley, in San Francisco almost, and suggests that stringent measures will have to be taken with the gentlemen of the road when they become so bold as to ply their business almost within hail of the metropolis of the coast.

The imports of iron, hardware, &c., by sea have been somewhat light of late. Neither have there been many arrivals of nails by sea, although the importation previously has been large comparatively.

By rail, too, imports have fallen off. For the past two weeks they have been 55 cars, including eight cars of agricultural implements, eight cars of iron, eleven cars of machinery, five cars of stoves, four cars of wire, three cars of hardware, fours cars of pipe, three cars of plate, two cars of cable, one car of safe, three cars of beams, two cars of steel, one car of wire netting, 1897 pounds of copper, 26,450 pounds of copper wire, 43,264 pounds of zinc, 180 kegs of nails.

There has been no special movement in tin plate or pig tin since my last. Prices remain without change. The Monowai brought to hand 2003 ingots of Australian tin.

The Wilson Dumping Apparatus.

The Wilson Automatic Safety Coal and Ore Dumping Apparatus, patented May 17, 1892, is being brought out by the Pittsburgh Coal & Ore Dump Company, 95 Fifth avenue, Pittsburgh, Pa. This automatic arrangement for dumping cars consists of: 1, automatic dump; 2, automatic safety horns in connection with the Wilson automatic spring brake. It will be noticed from the illustration that an approaching train of loaded cars from the mine is held in check by the safety horns, and at any distance from the dump. When the operator desires a car to come forward he releases the safety horns by means of the hand lever and the car approaches, moves on the dump, riding or pressing down the lever that opens the dump horns. The loaded car strikes the empty car that is standing on the dump and sends it forward, the dump horns now standing open.

When the loaded car has passed over the press lever the horns are closed by means of the springs ready to catch the loaded car. At this time the empty car has gone forward on a return track and moves of its own momentum until it reaches the rear of the dump, ready to be taken in the mine again. The safety horns can be operated in connection with any kind of dump.

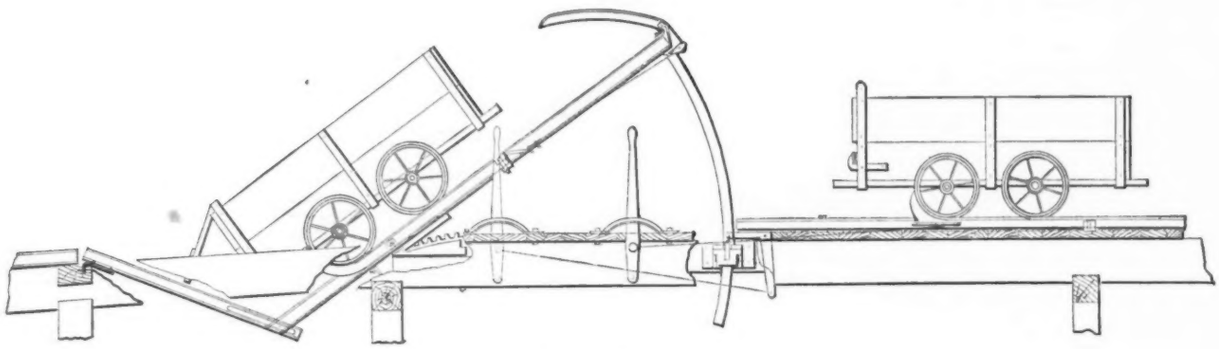


Fig. 1.—Elevation.

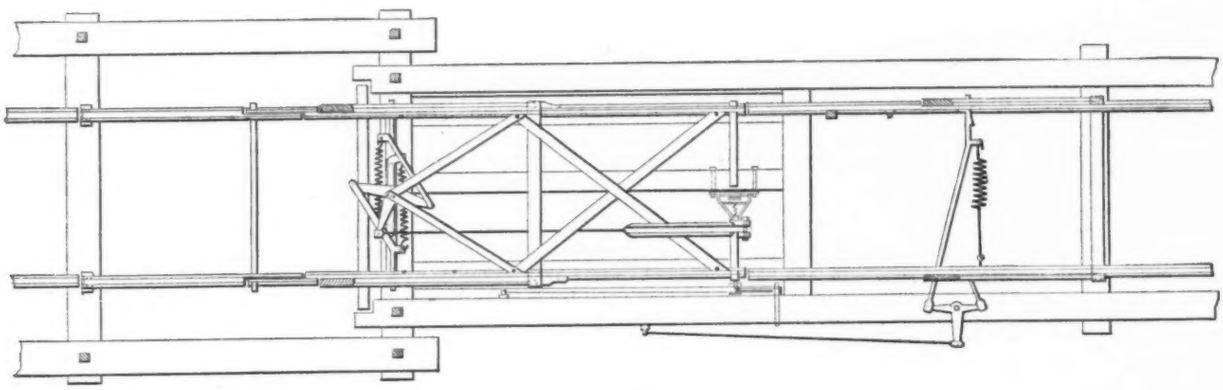


Fig. 2.—Plan.

THE WILSON COAL AND ORE DUMP.

The new freight traffic agreement between the New York & New England and Reading roads provides that 50 per cent. of the business shall be delivered at Hopewell, so that the New England road shall receive the long haul, and 50 per cent. at Hartford, so that the Reading road shall receive the long haul. This arrangement is one of the most important ever made by the New York & New England road. Another important arrangement soon to take effect is the transfer of the Housatonic Railroad to the New Haven Railroad Company, which will obviously break the old alliance between the Housatonic and the New England systems. In Connecticut, from the Thames River eastward, the New England will hereafter have no shore outlet, and will have to depend on its rival for connections with New Haven, Bridgeport, Norwalk and the whole line of large Connecticut shore towns.

The importers in Chicago of bicycle tires were all defeated in their attempts to secure a lower duty. The importers claimed the rims should be taxed at but 2½ cents per pound under the schedule relating to "tired wheels for railway purposes." Judge Blodgett denied that they could be used for railway purposes.

The new pumping engine built by the Southwark Foundry Company for the Spring Garden pumping station in Philadelphia exceeds the expections of the city authorities. The engine has a capacity of 20,000,000 gallons per day, and it worked up to 25 per cent. above the guaranteed capacity. The machinery will be run for three months before the final test is made.

BUTTE COPPER MINES.—I.

The history of the copper trade of the world furnishes no parallel for the wonderfully rapid rise to prominence as a district like that which the past decade has witnessed in Butte. With the exception of a few hundred thousand pounds, the entire copper product reported for Montana annually by the United States Geological Survey has come from the relatively small hill which dominates the town of Butte, to-day the greatest mining camp in the world. How rapid that development has been is best reflected by the following record of output, the table giving the entire production of copper in the United States, that of Montana and the percentage of the latter and of the Lake district:

Year.	Production United States. Pounds.	Production Montana. Pounds.	Percentage Montana. Per cent.	Percentage Lake Superior. Per cent.
1882..	90,646,232	9,058,284	...	...
1883..	115,526,053	24,064,346	21.4	50.1
1884..	144,946,635	43,091,054	29.7	48.4
1885..	165,875,483	67,797,864	40.9	43.5
1886..	176,764,043	57,611,621	36.0	50.1
1887..	181,477,331	78,099,677	43.4	41.7
1888..	226,361,466	97,897,968	43.3	38.2
1889..	226,055,962	98,222,444	43.5	38.7
1890..	259,098,092	112,980,896	43.6	38.9
1891..	284,119,764	112,063,320	39.4	40.2

But the past product does not in any way represent possible output, since accidents have interfered, and it is only within the last few years that the plant of some of the most important concerns has come up full, while a close investigation of the producing capacity of the Butte mines and concentrating plants has led us to the conclusion that they can easily reach 175,000,000 pounds per annum and if pushed to full capacity can put on the markets of the world not less than 200,000,000 pounds of copper. With the Lake mines on record with over 114,000,000 pounds, Arizona close to 40,000,000 pounds, Colorado steadily increasing, the United States can turn out 360,000,000 pounds, or 30,000,000 pounds per month.

The ore deposits consist of a series of parallel veins in granite, coursing east and west and dipping south. The number of these veins is large and they are not confined to the hill, but have also been discovered under the drift in the flats upon which some parts of the city are now built. The number of claims is very large and only a small percentage of them are being worked. By far the greater number of the operations are carried on by a few large companies. On the whole, the circumstances are not such as to encourage the establishment of a large number of small mines. The bulk of the ores are low grade and must be concentrated before smelting, so that a considerable investment of capital is called for. Several of the smelters do custom work, but the market is not on the whole a favorable one. The ores are copper glance, peacock copper and pyrites, the gangue being quartz. Zinc blende and occasionally galena are associated with the copper-bearing minerals. Practically all of the ores carry moderate quantities of silver and small amounts of gold. The concentrating ores in the camp range from 7 to 10 per cent. in copper. Nearly all of the mines, however, produce some high-grade ores carrying 20 per cent. of copper and upward.

The prices paid for ores vary considerably. One works gives from 4½¢ to 5½¢ per pound for the copper, 90 per cent. of the silver contents, based on the New York market quotation, and deducts $12 per ton of crude ore for treatment. Other works do not bid more than 3½¢ for the copper. For dry silver ores the prices are usually 85 to 95 per cent of the silver value, 90 per cent. of the gold if above $2, with a deduction of $16 for working charge per ton.

The Boston & Montana.

One of the oldest concerns in Butte is the Boston & Montana Consolidated Copper and Silver Mining Company, of which A. S. Bigelow is president and Thomas Couch is manager. The company is owned by practically the same men who have made the Tamarack on Lake Superior the great property which it is, and have long been identified with the Osceola. The Boston and Montana Company own a very large amount of mining property at Butte, of which a large part has yet remained unexplored. The principal ore extraction is from the Pennsylvania and Colusa claims, lying on the lower flank of the hill, and the Mountain View, which lies above the St. Lawrence. The former belt has now a splendidly equipped shaft in the Leonard. During their last fiscal year, ending June 30, 1891, the company produced from 144,705 tons of ore, 23,734 tons of matte and shipping ore, containing 26,693,842 pounds of copper and 285,856 ounces of silver. Since that time the monthly product has been as follows:

	Refined copper. Pounds.	Silver. Ounces.
July, 1891	1,880,935	16,990
August	2,141,500	11,665
September	2,412,918	23,684
October	2,571,875	25,894
November	2,379,631	25,487
December	2,207,175	27,402
January, 1892	2,580,229	30,753
February	2,440,286	30,837
March	2,350,000	27,802
April	2,200,000	19,504
May	2,650,000	.....
Totals	25,414,589	240,008

The lower works of the Boston & Montana Company were purchased some years ago ago from W. A Clark, and so far as it has been possible without too great an outlay they have been remodeled. The ore is hauled by teams to the concentrator, which is rated at 200 to 220 tons capacity. The ore is crushed in a Blake crusher and two sets of 14 x 22 inch rolls and is elevated to two sets of two trommels. The sized stuff is jigged in 16 Hartz jigs, while the slimes are treated on a round table. The ore is roasted in one 10-ton Brueckner cylinder and three 96 foot O'Hara calciners of 25 tons capacity, fired with coal. Two blast furnaces of 100 tons capacity are used chiefly for raw ore, heap roasted ore, raw concentrates and calcines, making about 25 tons of matte per day. Three reverberatories of the usual type produce about 15 tons of matte per day, making a total of about 40 tons daily, carrying from 58 to 60 per cent. of copper and 25 to 70 ounces of silver, special argentiferous mattes being also made at times.

The upper works of the same company, originally built for their predecessors, the Montana Copper Company, have a 200 ton concentrating plant. Formerly all lump ore was calcined in open heaps, but popular indignation at the smoke nuisance led to the building of roasting stalls which are connected with a 120-foot stack. These stalls, of which there are 128, are 10 x 8½ x 7 feet deep, with a capacity of 12 tons. The smelting plant embraces 14 hand calciners varying in size, but averaging 30 feet in length; two blast furnaces, one being held in reserve, and six reverberatory matting furnaces. The works produce 35 tons of 58 to 60 per cent. matte, and 12 to 15 tons of a matte somewhat lower in grade.

Both plants are somewhat antiquated, and local circumstances, notably the scarcity of water, hardly admit of their further expansion. The company therefore decided to erect a new plant at Great Falls.

The Great Falls Works

of the Boston & Montana Company possess special interest, because it is the latest plant built; embodies many features which have proved valuable by experience in Butte; has followed new lines in important particulars and was located and designed with special reference to the conversion of copper matte into blister by the Bessemer process and electrolytic separation, with the utilization of water power. The plant is located on the left bank of the Missouri River below the town of Great Falls in the immediate vicinity of the dam, a canal conducting the water to the power house, a substantial two-story building constructed on the slow-combustion principle so generally adopted in New England mills. The water is carried to the wheels by two pen stocks, 9 and 10 feet in diameter. A pair of 22½ inch 200 horse-power Stillwell & Bierce wheels and a 40-inch wheel of the same make drive by rope transmission two Root rotary pumps, delivering 3500 gallons a minute at 70 revolutions; a Wilson & Snyder, 9 x 24, high-pressure duplex pump, delivering 700 gallons a minute at 32 revolutions at a pressure of 115 pounds, intensifiers, designed by Henry Aiken of Pittsburgh, being located in the smelting works to handle the hydraulic gear of furnaces and converters. The same power operates, also, a very fine E. P. Allis 48 x 48 inch duplex veritical blowing engine, with a 26-foot fly wheel, arranged for rope transmission. The engine is to be used for the Bessemer converters. The power plant also embraces two 20 inch wheels for a 650-light Thomson-Houston incandescent, a 50-arc light Thomson-Houston dynamo, and a 30 kilowatt 500-volt machine for the electric crane. One of a pair of 44-inch wheels of the same make is used for the transmission of power to the concentrating mill, the smelter and the shops, while the other 650 horse-power wheel is employed for electrical work in connection with the electrolytic plant planned. It will run three dynamos of 165 kilowatts, a voltage of 165 volts and 2000 ampères; two dynamos of 1000 ampères each, working at the same time. The electrolytic plant, which will be located on the plateau above the works, will have 288 tanks in one series, the plates being in parallel in the tanks. The capacity of this plant will be 1,250,000 pounds of copper per month.

The rope transmission alluded to is a particularly fine piece of work, practically designed by H. A. Herrick and built by E. P. Allis & Co. of Milwaukee. With a very high speed the transmission works very quietly, the main sheaves being 9½ feet in diameter and the carrier sheaves 6 feet. Power is transmitted to the concentrator building, a distance of about 1000 feet, and to the smelter, a distance of 1700 feet, being taken off at right angles at the latter.

The ores are shipped from the mines of the company at Butte by the Great Northern to Great Falls, where, of course, they must first be concentrated. The concentrator is a building placed on the flank of the bluff, its width being 140 feet and its length over all 288 feet. The ore is first crushed in 10 x 20 rock breakers, screened in two screens and crushed in two 7 x 10 crushers, going finally to two sets of 16 x 30 rolls for each division. The plant is laid out for three divisions, of which two are now completed and the third is under construction, into which probably a Ball stamp will be put. Each division has six hydraulic separators and 24 Collum jigs, the middlings being crushed in a pair of rolls, with a Huntingdon mill in reserve, below which are 16 Collum finishing jigs and 12 double slime tables 16 feet in diameter. The slimes are worked in 20 Frue vanners. They are elevated by sand pumps. The concentrates and slimes are settled in settling tanks, of which there are 24 for each section. The concentrates are drawn from them direct into bins placed below them, which bins

can be emptied directly into the railroad cars placed on the track below them.

Near the concentrating plant is a boiler house equipped with two 150 horse-power Heine boilers, fitted with automatic stokers. Lethbridge coal is being tested in them. These boilers furnish the steam for heating the concentrator building, and will in the future supply the Ball stamp.

The concentrating plant was laid out for a capacity of 500 tons when the three divisions are completed. It has not been running long enough to have got beyond the period of minor modifications and changes.

The smelter building is a fine iron structure, built by the Berlin Bridge Company, 455 feet wide and 228 feet long. It, too, is built on the flank of the bluff, so that materials once delivered at the top are cheaply moved from one part to the other of the plant. The whole width of the building of 455 feet is occupied by 39 x 20 foot bins, commanded by standard gauge railroad track, for concentrates, smelting ore and coal. The whole range of the bins is commanded by a broad track, upon which rests a low truck for the transfer to any point of the ore and coal cars which take material from the bins. This transfer truck is to be handled by an electric winch. On the terrace below the bins, at one end of the mill, are the Brueckner roasting cylinders, with their batteries of gas producers, so far as put in. Further on is located the crushing machinery for crushing the ore which does not need concentrating but does require roasting. Elevators take it to the bins in which it is stored. Further on are the coal pockets, from whose shutes the coal is delivered to the producer plant of the smelting furnaces.

Returning to the Brueckner plant, we may note that the 24 cylinders, which are 22 feet long and take a 15-ton charge every 36 hours, are placed parallel in groups of six. Each group is commanded by a hopper, which may be moved above any one of the Brueckners in the group. For calcining Sand Coulee nut coal is used. Bins under the calcining furnaces and a transfer track facilitate the handling of the roasted ore to the hoppers of the smelting furnaces. The latter are again placed at a lower level. They consist of eight tilting reverberatories, with 13 x 16 foot hearth, the design, by Henry Aiken, being similar in many respects to the tilting open-hearth furnaces of the Pennsylvania Steel Company at Steelton, Pa. In fact, the plant in many respects shows the introduction into copper metallurgy of many features of handling materials characteristic of the latest American steel practice. Six of the furnaces were built by the Pennsylvania Steel Company, while two were constructed by Pollock & Co. The whole furnace is borne on three roller guides, bent to the arc of a circle, the bottom of the furnace being carried on three heavy riveted I-beams bent on the same circle. A hydraulic cylinder and rack tilts the furnace. Two of them have been in operation for some time, and the others are wholly or partly completed. They are heated with fuel gas and are regenerators, the tilting being required to pour off about three-quarters of the slag and for casting the matte. A good deal of trouble has been experienced in the effort to use the local coal in the gas producers. It contains fully 20 per cent. of ash and the facilities afforded in the design of the plant seem to encourage wasteful use for the present. The coal is shot direct from the bins into the hoppers of the Wellman gas producers, and the ashes are carried off automatically in launders. The coal is not such that the bed of fuel can be caught by a false grate, and the result is that when the attempt is made to get rid of clinker and ash a good deal of coal is lost. The producers work irregularly as yet, and the green men do not seem to be able to handle gas-fired furnaces. Still, the tilting furnace has a record of having treated 65 tons of calcined ore in 24 hours.

The plan of the designers contemplates the casting of the copper matte into ladles handled by a 20-ton Morgan electric crane, the matte to be cast direct without remelting into Bessemer converters which occupy a position on the lowest level of the plant. These converters are designed for a 5-ton charge and it is expected that they will make 18 heats per day on 55 per cent. copper matte. This part of the plant has not been in operation as yet. Steel makers will recognize in it the general plan so successfully introduced at the Sparrow's Point works of the Maryland Steel Company. A set of two Aiken intensifiers occupies a position near the converters. Plant is provided for the crushing and sampling of matte, and the grinding and screening of converter lining material.

Until now Frank Klepetko, the resident manager, who was for years identified with the Lake Superior mines and works of the Clark-Bigelow interests, has been under the serious disadvantage of conducting both construction works and carrying on producing operations with untried, though promising, plant and methods. In view of the fact that metallurgical operations are being successfully prosecuted with gas from low-grade fuels elsewhere, there seems every prospect that smelting and calcining will be done at Great Falls with the very cheap local coals. Then, with power for driving machinery and for electrolytic work at the lowest figures, the Great Falls plant must be able to work copper ore at very low figures. The copper trade will watch the outcome with the closest interest.

The Parrot.

The Parrot Company control and work claims on the same vein as the Anaconda, and do a considerable business besides in treating custom ores. They are largely controlled by the Farrell interest of Ansonia, and are operated as a close corporation. The ore from the Parrot Mine is sent down to the works below on a private line.

The concentrating plant, which was originally designed for 150 tons capacity per day, but which actually works from 225 to 300 tons, is equipped with rock breakers and seven sets of rolls. The crushed ore is screened in trommels, making four sizes from $\frac{1}{16}$ to $\frac{3}{8}$ inch mesh, the stuff being handled skillfully in 21 Hartz jigs. The slimes, after sizing in hydraulich classifiers, are treated on 12 True & Embrey vanners. The machinery is driven by a very fine tandem compound condensing engine. Considering the high cost of fuel, the use of high-class economical engines is not as general in the camp as it should be.

Lump ore is roasted in 120 stalls, while the concentrates are calcined in nine hand calciners 60 feet long, and two Spence furnaces. The whole calcining plant will, however, be remodeled at an early date. The smelting plant consists of two blast furnaces and six reverberatories capable of handling 425 to 500 tons. In the matting furnaces siliceous ores, purchased in the open market, are largely used. In the blast furnaces experiments are now being made with Montana coke, which has 15 to 17 per cent. ash, but costs only $10 to $12, as compared with $16 for Connellsville coke.

The Parrot Company have been the pioneers, in this country, in the use of the Bessemer converter for converting matte into blister copper. The plant consists of two sets of three converters each, the older of which will probably be remodeled. Each has its smelting cupola. Blast is furnished by cross compound compressor delivering at 8 to 10 pounds. The works produce, from ores from the Parrot mines, and from purchased ores and mattes about 2,000,000 pounds of copper and 100,000 ounces of silver per month. The blister copper goes to the electrolytic plant of the Bridgeport Copper Company, at Bridgeport, Conn., controlled by the same interests.

The Colorado Smelting & Mining Company,

one of the early plants in the Butte District, has since its inception been under the management of Henry Williams, and is practically a branch concern of the famous Boston & Colorado Works of Argo, near Denver, Col. The company own a number of mining claims and are working chiefly the Gagnon property. They are, however, purchasers of both copper and silver ores, and aim at the production of a high grade of matte carrying large quantities of silver and gold. This matte is shipped to the Argo plant, where it is working in the manner outlined in a recent description of that establishment in the columns of *The Iron Age*. The company have recently completed a very fine concentrating plant, to which the ore is delivered by teams, being dropped into large bins having a storage capacity of 600 tons. The ore is drawn from the bins to rock crushers, from which the material is elevated to two sets of trommels having four sets of screens each. The recrushing is done in three sets of rolls, one of them used for middlings. The coarse ore is concentrated on eight sets of Hartz jigs, while the slimes are sized in hydraulic classifiers and then go to 12 banners. The plant is driven by a 65 horse-power tandem compound condensing engine, while water is furnished by centrifugal pumps driven by motors coupled direct, the generators being located at the mill. The calcining plant consists of eight hand calcining furnaces, the smaller ones of which take an 8-ton charge, while the larger ones handle 10 tons. Three Brueckner cylinders are also a part of the plant, handling 14 to 15 ton charges in 48 hours. The smelting is done in six reverberatory matting furnaces, one of them of exceptional size not having been completed until lately. In these furnaces the ore is smelted to a 45 per cent. first matte, each furnace handling 4 charges of 7 to 8 tons per day. The slag is skimmed and the matte is allowed to accumulate, being tapped every second day. This first matte is crushed, roasted in calciners, and is smelted again in one of the furnaces especially equipped for this purpose. It is carried up to the grade of 70 per cent. copper, the slag produced in this furnace being tapped direct in a liquid condition into an adjoining ore matting furnace. The works produce about 275 tons of matte per month, this product carrying about 70 per cent. of copper, 375 to 400 ounces of silver and 1 to 2 ounces of gold. For coarse ore, the works are equipped with 60 roasting kilns.

The Butte & Boston.

The Bigelow-Lewisohn interests comprise also the Butte & Boston Mining Company, owning a number of actively worked mines, but have suffered early in the year witha loss by fire of their smelting plant, located, like the two Montana smelters, at Meagagrville, a suburb of Butte. As indicating the magnitude of their operations, we may state that from September 1, 1888, to April 15, 1892, this company produced 30,312,019 pounds of fine copper, 792,031 ounces of silver and 2639 ounces of gold, the receipts for which were $3,167,191.70, leaving a mining profit of $680,929.49. The smelting plant is to be rebuilt, and then the company will be in position this fall to be pro-

ducing from 1,500,000 to 2,000,000 pounds of copper per month.

W. A. Clarke, a prominent banker and mining operator of Butte, controls a plant which is largely used for handling custom ores.

NEW PUBLICATIONS.

BRASSEY'S NAVAL ANNUAL FOR 1892.

The English Naval Annual, published under the direction of Lord Brassey, has just made its appearance for the year 1892. Probably this book, purchasable in New York at Van Nostrand's, has a larger number of readers than any other similar publication, not even excepting the Naval Annual published by the Office of Naval Intelligence at the Navy Department, Washington. The purport of both volumes is the same—to give the latest and best information concerning the progress and development of naval matters. Brassey is less technical, easier reading and possibly less accurate than the United States Annual. This is to be expected, for the Intelligence Annual is an official compilation in which no latitude is allowed, whereas Brassey's Annual is the work of men, able enough to be sure, who as a rule are not active naval officers with official records at their disposal.

In the present Annual the contributions from various writers of authority on naval subjects form a new feature. However, those chapters of greatest interest to the readers of *The Iron Age* are still in the able hands of Captain Orde Browne. He writes on Armor, Ordnance and Rapid-Fire Guns.

In looking over the chapter on Armor and Armor Experiments one is at once struck with the extreme conservatism of the writer. Captain Orde Browne does not place much faith in the value of nickel. This is not in accordance with the strong opinion in its favor expressed by Lieutenant Southerland, U. S. N., in the "Information from Abroad," published last summer. Though Captain Browne admits that very good results have been obtained with nickel in some trials at Portsmouth, yet he also states that serious disappointment was experienced in the case of a plate with a hard steel face and nickel-steel back tried at Shoeburyness last October. Altogether he says, "The action of nickel on steel has been shown in certain cases to be remarkable, but experience is needed to enable it to be used with skill and confidence.

About two pages are sufficient for the gallant Captain to knock off the Annapolis trials of January, 1891, and those of Indian Head in November. The best plate was the Bethlehem Harveyed nickel-steel plate against which three out of four Holtzer projectiles broke up, one rebounding uninjured. "The plate," writes Captain Browne, "was an admirable one, beating any plate hitherto tested, except the compound plates which have been made by Brown and hardened by Tresidder's process."

A series of trials of Brown's compound plates with faces hardened by a process devised by Captain Tresidder took place last summer and autumn at Shoeburyness. To learn the precise effect of the process, portions cut from the same plate were treated, some on Tresidder's process, and others oil hardened, and subjected to the same firing test. Repeated trials showed that the blow which perforated the ordinary oil-hardened plate was borne by the Tresidder plate, owing to the fact that the projectile broke up against it.

Another trial took place last October on board the Nettle. Six-inch shells, three of steel and two of chilled iron, were employed, the velocity being 1976 foot per second, and the energy 2708 foot tons. The results were so highly satisfactory that a comparison is naturally made between the Tresidder plate and the winning Bethlehem plates. It is impossible, however, to compare these plates completely and fairly, because the Indian Head trial was much more severe than that at Portsmouth. The velocity was greater, the projectiles better, and the final 8-inch round may be regarded as a test pushed to destruction. The full detailed description of this trial was given in *The Iron Age*. Captain Tresidder might plead that every projectile had been broken up by his plate, whereas one 6 inch had rebounded from the Bethlehem plate. As the case stands the plate which was actually submitted to the most severe blows has the advantage until some other plate can do better.

England made trial of a solid steel plate and got good results, but the manufacturers, the Messrs. Cammell, consider that there is no evidence that solid steel is superior to compound. This is like Great Britain. She still holds fast to compound armor, though France has shown that steel is better, and the United States that nickel-steel is best.

Altogether it may be said that armor plates have been made and tried during the past year which have exhibited resisting powers greatly in excess of those hitherto tested. This success is mainly due to increased hardness in the face. On this depends the value of the Harvey and the Tresidder processes.

In this connection the following rule of thumb for piercing armor may be found interesting: Take the caliber of the gun as a measure of the armor, and it will be found that no shot can perforate a plate unless it has over 1000 feet velocity for each caliber in the thickness. Thus an 8-inch projectile must have over 1000 feet striking velocity to perforate an 8-inch plate. It must have over 1500 feet velocity for a 12-inch plate, over 2000 feet for a 16-inch plate, and so proportionally. For many guns firing projectiles of medium weight in proportion to their caliber, the direct perforation is very close to one caliber for every 1000 feet striking velocity. On the whole it may be concluded that it is useless to fire at wrought-iron plates with less than 1000 feet striking velocity for each caliber in thickness of the plate attacked.

In considering only the perforation of armor steel is estimated to be better than wrought iron in the proportion of five to four; that is 5 inches of iron is equal to 4 inches of steel.

Captain Orde Browne begins the subject of ordnance by noticing the general position and functions of ship's primary batteries of heavy guns, and of the secondary batteries, which will in future consist of rapid-fire guns. The rapid-fire action, which originally came in with light guns to repel torpedo boats, is now applied to 6-inch guns firing projectiles weighing 100 pounds, whose energy at the muzzle is 4000 foot tons. The main value of comparing the tons of metal thrown and foot tons of energy between heavy guns and rapid-fire guns, which Captain Orde Browne does, is to show that for general purposes of destruction of lighter structures and the *personnel*, the rapid-fire armament decidedly surpasses the heavy one; though for perforation of armor and really heavy blows the latter is necessary.

An important element not to be overlooked in the introduction of rapid-fire guns is the power to carry an increased supply of ammunition, a most important matter if ships are employed in prolonged operations against an enemy.

The chapter on rapid-fire guns—called in England quick-firing guns—deals with the latest advancements of the type as exemplified in the pieces made by Armstrong, Krupp and Canêt.

Since the above was written, in fact by the last mail from France, we learn that Canêt has produced a 6-pounder gun 80 calibers long—40 is the ordinary length—with which 3300 feet initial velocity has been obtained, the pressure in the bore being only about 3 tons per square inch. This is far in advance of anything else thus far realized in ordnance.

Not the least important and by no means the least interesting pages of Captain Browne's contribution to the Annual before us are the complete tables of rifled and rapid-fire ordnance for the principal naval countries of the world. Each gun, its caliber, weight, dimensions, ballistic properties and charges are carefully set down in convenient order for ready reference.

Part V of the Annual is contributed by Lord Brassey. In the second chapter, that on shipbuilding policy, he makes some remarks on the subject of guns that are germane to the subject treated by Capt. Orde Browne, and after stating that the current of opinion is setting strongly against exaggerated weapons, Lord Brassey quotes from M. Lanessan, the reporter to the committee on the French navy estimates, as follows: "The 75-ton gun can be fired once in 10 or 12 minutes, the 53 ton gun once in 10 minutes, the 27-ton gun once in 7 minutes, the 4-ton gun once in 2 minutes. Two vessels steaming at 15 knots will approach each other at the rate of more than a mile in 2 minutes. If they fire at a distance of 4 miles they will pass one another in 8 minutes—that is to say, before they are ready to fire a second shot from their heavy guns."

Enough has been given from the annual for 1892 to indicate the usefulness and value of the book; and in closing this hasty review of only a portion of the contents we give the headings of the chapters dealing with other important matters. Part I, Chapter I, deals with the "Progress of the British Navy, 1891-92;" Chapter II, "Progress of Foreign Navies, 1891-92;" Chapters III and IV, "Naval Maneuvers;" Chapter V, "Descriptions of Ships Building or Completing;" Chapter VI, "Marine Engineering." Part II gives the tables and plans of all the armored and unarmored ships of the navies of the world. Part III, which we have reviewed above, is on armor, ordnance and guns. Part IV contains official statistics, statements and papers of programmes, estimates, budgets and policies. Part V discusses in Chapter I manning and training; Chapter II, shipbuilding policy, and Chapter III, navy estimates. A copious index follows.

The steamship Mariposa, one of the two largest boats on the lakes, was launched from the Globe Iron Works at Cleveland, 16th inst. While a monster, she is also a great beauty, and the plating of her hull is one of the most finely finished pieces of work ever turned out of the Globe shipyard. She is the eighth of the Minnesota fleet, and the fifth of the fleet built in Cleveland. The Maritana, the sister ship to the Mariposa, was launched last week at Chicago. The Mariposa is 350 feet in length over all, with 330 feet keel, 45 feet beam and 24½ feet depth of hold. She is expected to carry at least 3600 tons of ore on a draft of 15½ feet. Her engines are triple expansion, with cylinders 24, 39 and 63 inches in diameter by 48 inches stroke of piston. Her boilers, which are yet to be placed in her, are three in number, 12½ feet in diameter by 12 in length and tested for 175 pounds pressure. Her wheel is 14½ feet in diameter, with 18 feet lead, and her speed when loaded is estimated at 14 to 15 miles per hour. She will be furnished with two water ballast pumps, one centrifugal and one duplex, and steam windlasses, capstans and steering gear and other modern appliances.

The Microscopic Structure of Iron and Steel.

[*With Supplement.*]

BY P. KREUZPOINTNER.

It is pretty generally admitted that the usual means now employed to ascertain the qualities and behavior of metals, physical test and chemical analysis, applied singly or combined, do not always give us that complete insight which we desire. Hence the microscope has been found a most valuable auxiliary in the physical laboratory, the missing link by which we are able to connect the threads which otherwise seemed to run independently in different directions.

The microscope shows to us the details of the structure of the metal we wish to use, while the analysis and physical test will give us the chemical elements and strength of the metal. Prof. A. Martens, director of the Royal Prussian Test Department, at Berlin, was probably the first who publicly called attention to the use of the microscope in metallurgy. His first paper, read before the Verein zur Beförderung des Gewerbefleisses of Berlin, was a description of spiegeleisen and glass. Dr. H. C. Sorby of Sheffield, England, took up the subject next, with his usual ability. F. Lynwood Garrison of Philadelphia has probably done most in this country in the line of practical work and advocating the use of the microscope as an additional means to metallurgical investigations. Since then the value of the microscope in the physical laboratory has been more and more recognized. As F. L. Garrison in his lecture truly said:*

> One thing is absolutely certain, that with the microscope we can see vastly more of the structure of the metal than could be seen with the naked eye. We see many things the existence of which we never before suspected, and, as in the case of the application of chemistry to this same branch of engineering, it is only required that the data so derived should be properly interpreted and applied that the practical value may be understood.

Though some experts have a surprising facility to judge of the quality of a metal by its fracture, yet there are details of structure which even those who are the fortunate possessor of the above faculty cannot discern in the rough fracture, valuable a guide as it is.

This subject of the microstructure of steel received new interest lately by a lecture delivered before the Gesellschaft für Eisenbahnkûnde last October by Dr. Wedding in Berlin. The lecturer drew attention to the microstructure of rails both for railroads and street cars. Prof. A. Martens, who, as already stated, is the originator of the system as now carried on in the Royal Prussian Test Department of the microscopic examination of iron and steel, took exceptions to Dr. Wedding's treatment of the subject, and in No. 9, May 1, 1892, of *Stahl und Eisen*, the organ of the Verein Deutscher Eisenhüttenleute, gives his reasons therefor, and presents a number of fine illustrations of the internal structure of a 100 pound so-called Goliath rail.

Since Professor Martens is an acknowledged authority, and the subject being of high interest to the readers of *The Iron Age*, some of these illustrations are reproduced. Figs. 1 to 6 are views of defects, blow holes, flaws, pores, veins of slag, which are frequently met with in steel, varying in size and number. Figs. 7 to 10 show the structure of the sound portion of the steel. Nos. 1 to 4 are from the edge of the head, and one can readily understand why rails may wear unusually fast, split, crush or break with such defects close to the surface. Five and 6 are from the middle of the rail. Likewise Nos. 7, 8 and 9. No. 10 is taken from the web, which, being compressed to smaller area, shows the marbled figures of Nos. 7 to 9 more elongated.

It is obvious that the defects shown here are objectionable in every part of a structure, and though sometimes they may be small, under unfavorable circumstances they may serve as the entering wedge to mischief and damage. Thus not infrequently has the engineer troubled himself over a break down and figured over the strength when the cause was really one of structure and not of the calculus. In number 6 of the *Mitheilungen*, 1891, an irregular publication, giving the results of work of the Prussian Test Department, an elaborate description of the photographing room and apparatus are given wherewith the etched specimens are photographed as here shown. Of the 33 photographs which accompany this report or description, some are here reproduced, as an indication of the peculiarities of structure in various classes of steel.

It is essential, in order to be able to properly understand and interpret the knowledge gained by the use of the microscope, to study diligently the crystalline fractures of iron and steel to become acquainted with their peculiarities and nature. This is especially the case with steel, which is a more complex metal in every way than iron. To be a good judge of steel requires a much more varied and extensive experience than to judge of iron. As to the practical value of the microscope in mill and laboratory there is hardly any doubt that it can be made as valuable as many of the means employed to widen our knowledge. Often enough the results of chemical analyses or physical tests, or both, fail or give us only an incomplete insight into the properties of metals. In such cases the microscope may tell where other means fail, and thus become an auxiliary of decided practical value. Thus the microscope assumes the functions of a tool in a shop which, though not needed every day, is indispensable nevertheless, and therefore is relatively as valuable as any other tool.

Of course one should not expect to "know all about it" after using the microscope once or twice, or even a dozen times. The intricacies of metallurgical products are not learned in a day or a month, as every one knows who has to examine metals, and hence one need not be discouraged if, likewise, the microscope does not show at once what we may find after a while, with patience and perseverance. Even aside from special cases, the general insight which we gain of the structure and hidden defects of a metal enlarges our view and knowledge, which, of course, is of practical value to the producer and consumer of steel.

An instance of the practical use of the microscope, where analyses and physical tests had failed, was reported by Herr Sigfried Stein at a meeting of the Verein Deutscher Eisenhüttenleute in January, 1887.* It appeared that that gentleman had had considerable trouble with steel furnished for drills for rock drilling in the St. Gotthardt Tunnel.

Either in the smith shop, when dressing tools, or more often in the tunnel while boring, the corners of the drills, which were forged from $1\frac{1}{16}$ inch round steel, would break off or bend over, or the middle of the drill would break or bend, and the corners not breaking. This became very annoying, but the most careful chemical analyses could give no clue of the cause of the trouble. The steel was carefully made and forged, and was remarkably uniform in all its parts, chemically and physically. As a last resort the microscope was called into requisition. The steel from which the drills were forged was cast in ingots 3 inches square. One of these ingots was forged down as shown in the sketch, then pieces were cut off, ground, polished and etched. Fig. 16 is the original section of the steel. Above it are shown the effects of the first forging. The edges which received more work became harder, while a softer streak ran through the middle. The second forging shows the reverse effects of the foregoing. The octagonal shape brings out four harder corners, which gives to the steel the appearance of a Maltese cross. From this the round bars were forged which served for the drills, Fig. 17.

Now, the microscopic examination of the structure revealed this want of uniformity in texture, and trials made in different ways showed conclusively that when the shaded or harder portion of the steel happened to form the corners of the drills the corners broke, or the middle remained too soft if the corners were the right hardness. If the whole of the edge of the drill came to be in the light portion then it gave excellent results. In order to avoid this irregularity in structure, the ingots were thereafter cast round and no more trouble was experienced.

The writer himself has learned to regard the microscope as a very valuable auxiliary in the physical laboratory, and would consider it a necessary accompaniment where masses of metals are examined and tested. We use the pocket lens to examine fractures. Why not go a step further and use a higher power that will show us more than the pocket lens will do? We make occasional etchings. Why not do it oftener and methodically?

Let us take a lesson from every-day life. Fig. 18 represents a tire of, say, 100,000 pounds strength per square inch, and rather good elongation for that strength. This would mean a tendency to "flow" in service. Fig. 19 is a little harder, but wears faster nevertheless. Fig. 20 is harder still and is liable to break without visible cause. The chemical and physical differences in these three tires are but slight and would not give any clue that No. 18 would "flow," why No. 19 would wear faster, though it is harder, and why No. 20 would break. Here now comes in the usefulness of the microscope. After preparing the sections properly we begin examination. In Fig. 18 we find a somewhat open-grained structure, with some indications of "flow" at A1, as was to be expected from the comparatively high ductility. In Fig. 19 we find a more uniform, denser and finer structure, which, as the greater hardness over Fig. 18 would suggest, should give also better wear.

However, at AA, the microscope reveals to us a porous streak in the shape of the segment of a circle. Thus, it is rational to suppose that this porosity at the point of greatest wear is the cause of the anomaly of a harder and denser metal than Fig. 18 wearing as fast or faster. Very likely there happened to be a nest of blow holes or oxides which appears at the wrong place. It is quite probable that this defect is only local, but nevertheless liable to cause a flat spot, which necessitates turning until the tire has worn down to the solid metal. Fig. 20 shows irregularity of structure, which, under other circumstances, may have little or no influence on the wear and tear of the metal. In the case of a tire, however, which is heated and cooled suddenly during the process of shrinking, though the metal may not be hardened thereby; yet in a hard tire it may be sufficient to cause internal strains of greater or less irregularity through the mass of the metal, according

* The Microscopic Structure of Iron and Steel. A lecture delivered before the Franklin Institute by F. L. Garrison, December 10, 1886.

* *Stahl und Eisen*, February, 1887, page 90.

Fig. 1.—From Edge.

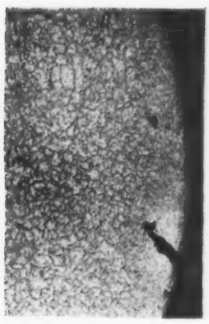


Fig. 2.—Roll Crack.

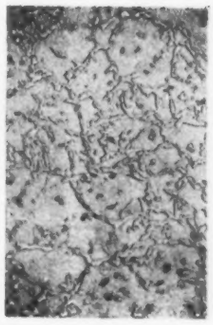


Fig. 3.—From Edge.

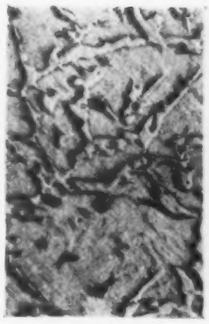


Fig. 4.—From Edge.

Fig. 5.—Cinder Veins.

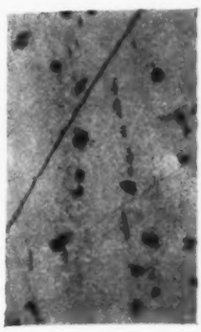


Fig. 6.—Cinder Veins and Blow Holes.

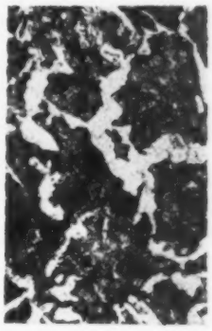


Fig. 7.

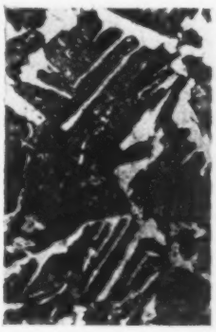


Fig. 8.

Structure of Center of Head.

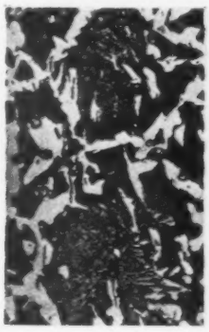


Fig. 9.—Near Edge of Web.

Fig. 10.—Center of Web.

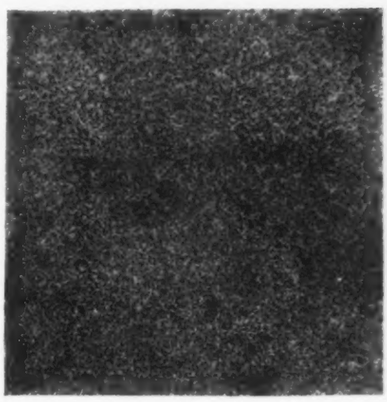


Fig. 11.—Rolled Open-Hearth Steel.

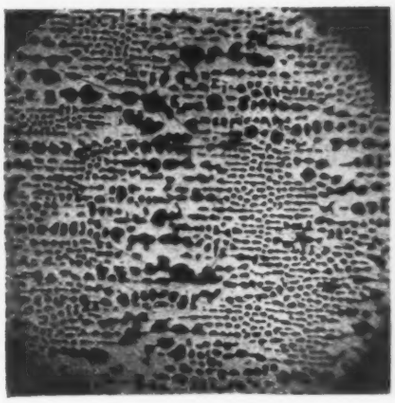


Fig. 12.—Spiegeleisen.

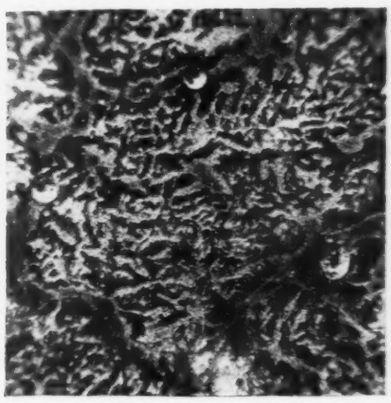


Fig. 13.—Medium Open-Hearth Steel.—Section through Ingot.

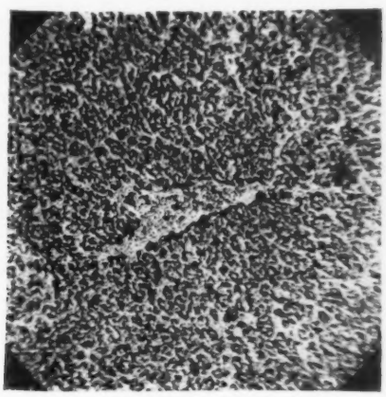


Fig. 14.—Hammered Crucible Steel.

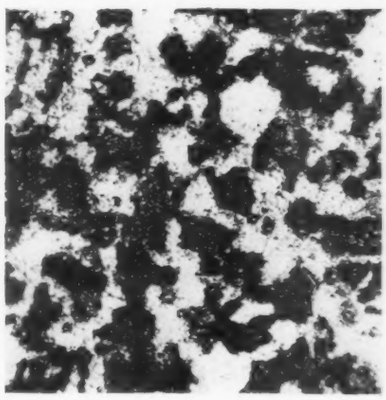


Fig. 15.—Rolled Basic Bessemer.—Normal to Rolling.

Fig. 16.—Crystal of Spiegeleisen.

THE MICROSCOPICAL STRUCTURE OF STEEL AND IRON.

to its uniformity. Greater density of the metal in one place would tend to irregular and disturbed transmission, through the mass, of the vibrations caused by shocks, such as a tire is constantly subjected to, and thus cause fracture under unfavorable circumstance.

A liberally educated man gets along better than one whose intensely practical mind makes him reject everything not applicable at every hour. Yet the former has learned not a few things which apparently have no relation at all to his profession. But they help him to enlarge his views, to develop his faculties, make him comprehend the connections between cause and effect, and hence he succeeds where the practical man falls to the rear. Now, the microscope in the mill and physical laboratory stands in the same relation as one of those things necessary to acquire a liberal education. It enlarges our view of metals, it is an aid to our judgment, it helps us to comprehend things much better than we did before.

But while advocating the use of the microscope as a valuable auxiliary to mill and physical laboratory, its use should not be intrusted to the every-day inspector, who may be a very good man to carry out the provisions of specifications but knows little of the "inwardness" of the metal he is handling.

But even if he has such knowledge, in the rush and bustle of inspecting there is no time for the preparation of specimens and their examination with the microscope, which work requires patience as well as care. Nor should anybody else attempt to pass judgment on the qualities of a metal by means of the microscope, unless that person has a very extended and thorough knowledge and experience of the properties of iron and steel. Finally, the microscope should have no place in specifications. To send the inspector on a microbe-hunting expedition into a steel mill, with the microscope under the arm, is not only out of place, but may do more harm than good, while the conditions under which an inspector is obliged to work can at best only produce negative results.

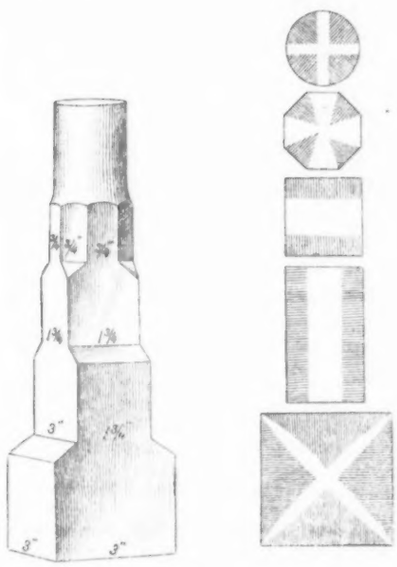


Fig. 17.

Fig. 18.

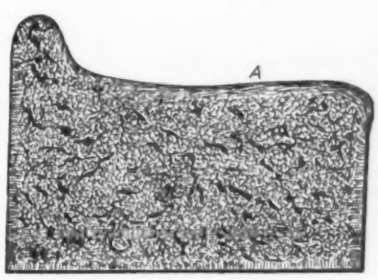


Fig. 19.

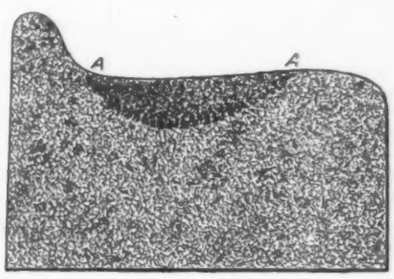


Fig. 20.

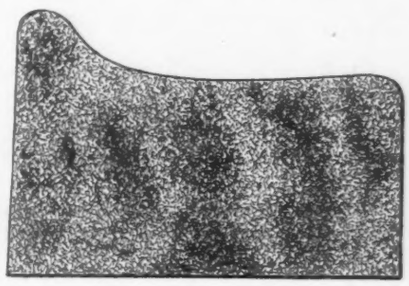


Fig. 21.

THE MICROSCOPIC STRUCTURE OF IRON AND STEEL.

There is a rumor to the effect that the Buffalo Brass and Iron Bedstead Company of Buffalo, N. Y., will locate at Niagara Falls, N. Y., in the near future. This corporation operate a large factory in the former place, and employ from 100 to 125 men. Besides going to every State in the Union, their goods are sold in South America, Austria and other countries. The concern is now working an investment of nearly $200,000, and is growing larger each year. C. C. Conroy of Niagara Falls is the president and one of the heaviest stockholders. Mr. Conroy states that it is true that there has been a great deal of discussion in the matter of moving the plant from Buffalo, and as the present plant is too small and the ground upon which it stands is getting too valuable for manufacturing purposes, it certainly looks as if the company would have to move soon. Mr. Conroy says the company would come to Niagara Falls if they can find the right inducements. The question of the price of power and of a proper site are important matters to be considered. The business of the company is a peculiar one, but it has taken tremendous steps forward in the past few years. Not long since the concern received a proposal from a city in Indiana, that was as good as a bonus of $50,000 if it would locate there. The directors, however, declined the offer. They are looking for an available location, and not bonuses or money inducements beyond what comes through the proper channels. In Niagara Falls they think they have found a favorable location and the chances of their locating there are most promising.

THE WEEK.

The development of the banana trade is an illustration of the marvels made possible by science through modern carrying facilities. Only four years ago a company purchased 35 square miles of land in Dines Cuba, then covered with a dense forest and having only ten inhabitants. About half the land has now been cleared and 9000 acres planted with bananas. Broad roads have been laid out, a town of 3500 inhabitants has been created, and nine steamers are kept running throughout the year to carry the banana product to New York.

A new iron swing bridge across the canal and river in Cleveland is proposed by the Cleveland, Canton & Southern Railroad Company.

The Russian Commissioner-General, M. Dobronizsky, hopes that the Russian section of the Chicago Exposition will be a very brilliant one, for it already numbers the names of 450 intending exhibitors upon its list. These Russian exhibitors are from all parts of the Russian Empire, from St. Petersburg to Moscow, from central Russia, the Baltic provinces, Poland, eastern Russia so far as Siberia, the Caucasus and Turkestan.

The newly invented Tweedie small-base bullet has the faculty of expanding after striking its object, thus inflicting greater injury. It is said to be much more efficient against thin iron or steel plate for the same reason than an old large-base ball.

A New York wholesale liquor dealer at Whitehall was found guilty by the Supreme Court of Vermont of violating the prohibitory law of that State and on being caught across the State boundary line was sentenced to imprisonment for fifty-four years. The United States Supreme Court, before whom the case came, dismissed it for lack of jurisdiction, three judges dissenting. The justice of the decision here referred to will be widely called in question.

A British oil steamer laden with petroleum from Philadelphia was struck by lightning not far from Bordeaux and blown up, with her crew of 15 men.

A fire-proof 14 story building, supported by a frame work of steel columns, will be erected on the corner of Broadway and Rector street, the scene of the Norcross bomb explosion. It will be used for office purposes and cost about $800,000.

The East Jersey Water Company, the corporate name under which the Lehigh Valley Railroad Company have built the new water-supply plant for Newark, N. J.,

have made a formal demand for the first payment of $4,000,000 on account of the $6,000,000 contract price, but the water authorities demur, insisting that the plant is not up to contract.

A new monthly line of freight vessels between New York and California has been established by W. R. Grace & Co., and the pioneer ship Charles E. Moody is now loading. There is no intention to cut freight rates.

The bung factory at Elizabeth, W. Va., the largest in the United States, was destroyed by fire 15th inst.

The United States Treasurer expects to come out at the end of the fiscal year, June 30, with a net cash balance of about $30,000,000, instead of about $40,000,000, as previously estimated. The difference will be due to the falling off of customs receipts.

If the Pacific Mail Steamship China, built in England, is granted an American registry, the owners assure the committee in Congress who are considering the application that two other steamers of at least 8000 tons each will be built in American yards.

The directors of the Northern Pacific Railway Company ratified the contract with the Northern Pacific Steamship Company, providing for a line of steamers from Tacoma to China and Japan. This contract is for ten years and provides for an exclusive interchange of business between the railroad and steamship companies.

The Hebrew Technical Institute held its sixth annual commencement at the buildings on Stuyvesant street and made a good exhibition of metal work and mechanical drawing.

A test of plowing by steam power will soon be made near Garden City, Kan. A field locomotive with an attachment of 12 gang plows will be used and the engine will have a power of 40 horses. Fifty acres a day can be broken. Only two men are required to run the machine.

The Master Builders' Exchange Training School in Philadelphia will this week bestow certificates of graduation upon 41 young men who have satisfactorily completed a course of instruction in various trades.

The well-known contractors Andrew and Albert Baird were drowned by the falling of the false work of a new bridge which was in course of construction across Licking River, and 30 workmen engaged on the structure shared their fate. Only two panels of iron were in position at the time, but the piling in the river bed was imperfectly placed owing to the flood.

The crops in Russia are reported officially from St. Petersburg to be in a worse condition than they were a year ago.

The total public debt of Mexico is nearly $159,000,000, of which $82,500,000 is foreign, and $5,625 000 per annum interest is paid to foreigners.

The report of the Rapid Transit Commissioners, appointed by the Supreme Court last April, is in favor of an underground railway for New York City. The main tunnel and branches for the entire route will be 11 feet 8 inches high, and each of the parallel tracks will be allowed 11 feet. There will be iron columns between each track for supporting the roof of the tunnel, which will be as near the surface of the street as possible. Electricity, or some motive power not requiring combustion within the tunnel, must be used. The report states that the scheme will, without doubt, attract capital.

The interchange of business between the New England Railroad and Reading's Poughkeepsie Bridge system is to begin this month. The freight includes large quantities of hard coal.

Foreign shipyards have shut down on young American contractors who go abroad in search of information. Technical education must be obtained at our own universities and navy yards.

Official statistics collated by the trade associations in the various towns in Germany have created a bad impression as to the condition of workingmen. Out of 960 towns reporting only seven have recorded any rise in wages during the year 1891, while 229 reported that wages had been lowered. The depression is worse in the large centers.

The progress of Japan during the last two decades has been most marked in her navy. Twenty years ago not a single modern ship was owned by the Government, while to-day the navy of Japan is a formidable one in both number and efficiency of ships. It comprises 22 steel cruisers of various sizes, all of the latest designs, carrying the most improved of modern ordnance and torpedo appliances, besides many additional composite and wooden vesses for the ordinary purposes of cruising. Each year other vessels are contracted for and built in the imperial dock yards or by foreign firms. Last year the sum of 50,000,000 yen was appropriated for the increase of the naval establishment, and it is proposed to continue this policy until the Japanese fleet shall be the equal of that of any nation which it may be called upon to cope with.

The Lighthouse Board will erect an experimental tower on Staten Island for the exhibition of a magnesium light, a German invention that can be seen 6 miles in broad daylight. The whole apparatus, with all its belongings, is only 2 meters high by some 85 centimeters in diameter; on the inside of a bellows through which benzine gas is led, while air is forced through pumice stone, strongly impregnated with benzine. This benzine gas is then passed through very finely powdered magnesium, and, saturated therewith, passes out of an upright pipe through a small flame, by which it is lighted, and where it develops such an intensity that the apparatus shows a luminosity of about 400,000 candles. The activity of the apparatus is regulated by clockwork.

The United States takes over one-half of Mexico's exports of precious metals, and nearly three-fourths of all her other products.

The revolution in Venezuela has reached a stage promising the restoration of business to normal conditions.

The number of immigrants arriving in the United States during May was 99,242, and for 11 months 546,200.

What will be the largest electric locomotive in the world is being constructed in Baden, Zurich. It is to develop 1500 to 2000 horse-power, and will make its trial trip in a few months.

A pneumatic tube is used for the mail between Paris and Berlin.

Trials of compound armor plate at Shoeburyness, England, are held to have demonstrated that, when these plates have been submitted to the Tresidder supplemental process, they possess powers of resistance and endurance much exceeding the compound plates tried in this country in competition with nickel-steel.

"The manufacturing industry exhibits many queer vagaries," said Col. Daniel Rittenhouse, who has been prominently identified with some of America's leading industries. "One would suppose that the great factories would always be located in the district producing the raw material, but such is seldom the case. Not a pound of cotton is grown in either Old or New England, yet those countries lead the world in the manufacture of cotton goods. Many of the great woolen mills are situated in the non-wool producing districts, vast furniture factories are located at points remote from the source of their lumber supply, and so on through nearly the whole range of manufactures. This appears illogical, and sections that produce raw material are continually making efforts to establish home manufactories. They argue, with apparent show of reason, that such enterprises must possess great advantages over those who have to freight their raw material long distances; but, somehow, these forced plants, so successful theoretically, seldom prove financial bonanzas. There appear to be sections peculiarly adapted to certain industries. There they take root and flourish, despite long hauls and other drawbacks, while in districts which appear to be their logical home they wither and die."

Pittsburgh as the greatest gas city in the world takes on a new lease of life. A new gas field 20 miles in length, and having an estimated width of 4 miles, has been discovered 15 miles distant from Pittsburgh, and it is estimated the new field will give a stronger pressure in Pittsburgh than ever before, and is good for the next ten years. This new gas territory will probably be known as the Pinhook field. Three wells of the greatest promise have been struck there by the Philadelphia and People's companies, and the pressure is so high that thus far it has been impossible to take the gauges of the wells.

The proposed completion by the Mexican National Construction Company of the railroad from the harbor of Monzamillo on the Pacific Coast, to Guadalayara, about 225 miles, will put that port in communication with the entire railway system of the United States. Of this line, 59 miles are already in operation. A letter from the City of Mexico speaks of the great changes wrought in that country by the introduction of railroads. Property in the country at large is said to have doubled in value in consequence. Haciendas and mines formerly remote from markets, but now close to them in point of time, are especially affected. At the same time there are large cities like Gardalajara and Jalisco which have retrograded, the old time monopoly of their respective districts being overthrown. On the other hand, cities such as Monterey, Tampico, Laredo and Pueblo have become more prosperous. Some years must pass before there is a complete readjustment of trade. Queratero and Oaxaco will derive much benefit from their new connections and gradually become better known by American citizens. The great want of Mexico is immigration.

The money circulation of the United States was reported by the Treasury Department on June 1 at $1,620,000,000, compared with $1,613,000,000 on May 1 and $1,608,000,000 on April 1. With a corresponding increase during the present month the circulation at the close of the fiscal year will be about $1,625,000,000, and will compare as follows with the corresponding date of five preceding years. Money in cirulation July 1:

1892	$1,625,000,000
1891	1,500,000,000
1890	1,429,000,000
1889	1,380,000,000
1888	1,372,000,000
1887	1,317,000,000

The increase of circulation constantly taking place, and the accumulation of capital at all commercial centers, is a sufficient answer to those who clamor for more money.

The Iron Age

New York, Thursday, June 23, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

The Agricultural Outlook.

A change almost magical seems to have come over our crop prospects in the grain-growing regions of this highly-favored country within the last few days, we may say dating from the subsidence of the Western floods. Grave apprehensions of disaster in the agricultural regions are quickly followed by hopes, already strengthened into sanguine calculations—at least in some quarters — of another magnificent harvest, almost a repetition of the unprecedented ingatherings of 1891. The first solid basis of calculation was afforded by the June report of the Agricultural Bureau at Washington, which made the acreage of winter wheat practically the same as last year, while the reported condition was 88.3, and while the acreage of spring wheat at the present time under culture is represented to be actually larger, though only a fraction more than it was a year ago. The condition of spring wheat was 92.3, indicating a slight decrease. From the foregoing data estimates are already submitted from various quarters recognized as authority in such matters, differing somewhat in details, but agreed in the facts of special significance as related to the future prosperity of the country and the probable enormous volume of our exports during the coming twelvemonth—facts bearing at least a tolerable comparison with the results of the great harvest of last year, even if due allowance be made for miscalculations respecting the production of spring wheat, which was sown late in many localities and must be subject yet to many vicissitudes. Chicago estimates based on the Government report indicate a yield of 524,463,000 bushels for the entire wheat crop, as against 612,000,000 bushels for 1891, as per Government report. The figures for June also indicate a crop of 661,000,000 bushels of oats, against 738,000,000 bushels last year. *Bradstreet's* estimates that the reserve, visible and invisible, on July 1 will be 70,000,000 bushels, and the crop about to be harvested 550,000,000 bushels, making a total of 620,000,000, which, after deducting 368,000,000 bushels for seed and consumption, will leave 252,000,000 bushels for export and reserves, of which 200,000,000 can be easily exported, and, if necessary, 220,000,000, or as much as has been exported the current season.

In the New York local market, where these figures have been the subject of careful scrutiny, there is a tendency to regard the estimate of probable surplus for export as excessive, the gross yield being put down nearer to the amount named in Chicago. Nevertheless, the fact must be noted that the supplementary reports now coming to hand from South Dakota, Kansas and other sections where the harvest has already made good progress encourage glowing expectations. Kansas, for example, promises a crop 5,000,000 bushels larger than last year's, and the yield in Texas is above the average. In Minnesota the crops are two weeks late and on the flat lands of Illinois farmers have been compelled to abandon their crops.

A vital question next to be determined is the probable foreign demand, but upon this point reports are so conflicting as to afford no exact data. The productive power of Russia is doubtless impaired, through the exhaustion of seed and the slaughter of farm animals used in sowing and harvesting. And in France drought is doing much injury. On the other hand, the grain crops in the Argentine Republic are reported to be very abundant, and prospects in India are encouraging.

Taking altogether and accepting as substantially accurate the advices thus far received, the business men of the country are warranted in assuming that the year 1892 will rank among the most prosperous, regarded from the agricultural standpoint, of course not omitting from consideration the yield of cotton, respecting which the season is yet too early for predictions. Large crops mean good returns to the farmers, a liberal distribution of general merchandise, remunerative traffic for the railroads and lake carriers, also a continued profitable foreign trade, imparting a stimulus to all branches of industry, as well as opening new channels for the employment of capital. Undue speculation is the one thing to be avoided.

The Wages Question.

Elsewhere we present, for ready comparison, the wages scale proposed by the Pittsburgh iron manufacturers, together with the present rates. A glance at the figures will suffice to show that the readjustment aimed at is radical indeed. In some parts of the scale it cuts even deeper than that presented by the Mahoning and Shenango Valley mills. The grounds on which many reductions are asked will be fully and promptly appreciated by all who are familiar with the commercial and the technical developments in the iron trade. But they are rarely understood by outsiders, while they are deliberately ignored by many writers on economic subjects. We have pointed out in the past that the 2 cent card rate is purely fictitious, since that figure for bar iron has not been touched for years. It should be noted also that the Western Iron Association has not for years had any functions whatever in the way of establishing prices, and has, in fact, enjoyed merely a nominal existence. If the men had presented a scale sliding down to 1.50 cent as the base price, it would have been necessary to provide some means of establishing the market prices. Possibly some arrangement similar to that prevailing in the North of England might be most satisfactory.

But there is another consideration, technical in its character, which necessitates a complete and thorough revision of the present scale. Since it was formulated progress in the way of appliances and machinery have very greatly increased the tonnage of material which the same crew of men can get out of furnaces and trains in a rolling mill. The iron manufacturers have reaped the advantages growing out of such costly improvements only in a moderate degree. They have secured only that share which is represented by the lowering in general expenses and in fuel. The cost of mill labor per ton of product has remained the same, and the men have taken the whole increase in wages which a much larger tonnage has naturally brought with it. The manufacturers justly claim some share in the advantages which the investment of their own money has brought about. This is the issue which was brought out at the Edgar Thomson steel works some time since. It is the issue which is now at stake in the contest at Homestead, and in a less striking manner has presented itself with every progressive concern in the West. The men are entitled to good wages and they get them. But no manufacturer who has, by the investment of capital in and by the skillful designing of machinery, succeeded in doubling the product of a furnace or a train should be asked to continue to pay the same tonnage rate. He is certainly entitled to a share of these advantages because they have been created by him.

Another point deserves consideration. When the present scale was formulated, the extra prices for special sizes obtained in the markets were realized as established by the manufacturers. To-day no one pretends to pay more than "half extras," so that the official list has been cut in two, and there are many instances where it has fared even worse.

When, therefore, a great show is made of the percentages of the reductions made, an unfair and unjust presentation of the case is put before the public. The result of the commercial situation, and of the development of manufacturing, has been to make the old scale obsolete and unjust. This has been going on for years. It has been cumulative, until a thorough reform is imperative. The time for that reform has come, and the manufacturers would be unjust to themselves if they did not aim to carry it through.

When to Discard a Machine Tool.

Nowadays manufacturers often make the remark that they throw out a tool the instant it becomes so worn as to be incapable of doing work up to the desired standard, and substitute a new one. Experience has proved that it is not economical from any point of view to attempt to do nice work upon a partially worn-out machine. The question then comes up: "When shall a tool be discarded, and what rule shall be followed in reaching a conclusion?"

Put this question to twelve men and twelve different replies will be received, as each is a guide to himself and each pursues his own methods, which are at variance with the others. Wear begins with the first job and continues steadily until that point is finally reached when the tool must be placed on the retired list. But it is not possible to make a rule for ascertaining that point, which shall be applicable to all machines; neither can a rule be made which shall govern like machines engaged upon work and materials of different kinds. Further than this, a rule fitting a tool intended for coarse work would be of no use when applied to one designed for doing work of the finest description.

The question as to the desirability of substituting a machine of better design for the one in place does not enter the problem.

Machine tools may be divided into two general classes, those doing fine work and intended to work closely to measurement, and those doing coarse work in which accuracy and finish do not enter as important factors. It is a comparatively easy matter to determine when to throw aside a machine of the first class, and one of the best rules we have heard of is the following: The machine is useless for fine operations when it is out of alignment as much as the greatest variation allowed in the work it performs. For instance, if the ways carrying the emery-wheel carriage of a grinding machine and the centers holding the piece being ground should become so worn that it would not be possible to produce a true cylinder without a greater variation in diameter than one quarter of a thousandth, then the tool should be discarded. In forming a judgment of these tools great assistance is had from the fact that their product is more closely watched and carefully inspected than that of the rough tools, and it becomes known the instant they begin to deteriorate.

A rule such as the above would, of course, have no meaning if applied to tools of the second class. Determining when to discard these tools is a much more difficult question. Some manufacturers estimate the matter by the quantity and not the quality of the work done. A certain reduction in the amount of the output is allowable, but when this reduction reaches the point where its money value is more than the interest on the cost of a new machine—consideration being taken of the market value of the old machine—a change would be advantageous. In this case the question appears to rest solely on the amount of work done by the machine, while in the first case the essential element was in the quality of the work performed. We will suppose that a machine when new did work to the value of $10 a day, and then its capacity became so reduced that its output was only worth $9. Here is a loss in earning power of $1 per day. The solution of the question whether to discard that machine or not now becomes very simple. If the one dollar is more than the interest on the cost of a new machine, then the old one should go. In other words, just as soon as the reduction in the product of any machine reaches the point where the loss exceeds the interest on a new machine, then the new machine should make its appearance.

We have not taken up the question of the advisability of repairing the tool, instead of selling it and buying a new one, because that is controlled by the same rules, but, in addition, it is necessary to estimate the cost of the repairs and the probable life of the machine after repairing, as compared with a new one. It is a pretty safe rule not to attempt to repair a high grade tool, but to confine the attention to those not so accurately made and not designed to produce work of the best character.

CORRESPONDENCE.

Great Cables.

To the Editor: In the issue of *The Iron Age* June 2, on page 1079, a cable is spoken of as the longest ever made for cable road purposes. This cable was 28,020 feet in length, weighing 72,830 pounds. We have photographs in this office of the following cables made by our factory: One manufactured for the Denver Tramway Company of Denver which was 32,145 feet in length, weighing 86,867 pounds. One manufactured for the Portland Cable Railway Company which was 33,000 feet in length, weighing 76,350 pounds, and another manufactured for the Metropolitan Street Railway Company of Kansas City, 32,300 feet in length and weighing 95,200 pounds. You will notice all of these cables are both longer and heavier than the one mentioned, and, of course, are only a few of the many manufactured by our company. Yours truly,

WASHBURN & MOEN MFG. CO.

SAN FRANCISCO, June 11, 1892.

Cost of Collecting Checks.

To the Editor: Your editorial in *The Iron Age* of June 2 on "The Cost of Collecting Country Checks" appears to me an excellent presentment of a growing evil in business practice, and I trust that it may arouse discussion and possibly do much to bring about a reform that is greatly needed. As a merchant, I recognize the importance of being liberal with customers, and am a strong believer in liberality in dealing, but liberality should never be allowed to go beyond the bounds of well-established business principles. It is one of the cardinal principles of business that goods should be paid for in money at the place where they were sold, free of expense to the seller. If the customer sends his check on a small town in the West or South, it is not money, but an order on his funds perhaps a thousand miles away. Now, either my bank or I must collect that money and one of us must bear the expense as well as loss of time, for it is not cash in hand until the returns of the collection are received.

I think that, to a great extent, our city banks are to blame for this, as some of them, to gain deposits, offer to collect such paper free of charge. What will the result eventually be? As soon as it is known that country checks will be accepted at par the entire receipts of merchants at the large centers will consist of checks from all parts of the country. The banks will find their deposits are largely in this miscellaneous paper instead of drafts of well established banks on equally well known banks at trade centers. The labor and expense of collecting all this paper will become enormous, and then no bank can afford to do the work without compensation. The banks, in self-protection, will have to unite in charging for the services when that time comes. Will it not be very difficult to get customers to return to the old custom of making payments in good bankable funds?

A draft issued by a bank on a bank is presumably good, but in times of financial distress what assurance can a merchant have that this miscellaneous paper is good? I believe that this so-called liberality of banks to their depositors, and of merchants to their customers, is contrary to good and safe business practice, and is sure to bring evils that cannot be compensated for by any temporary increase of patronage. The margin of profit in wholesaling is now so small that no merchant can afford to pay an expense of ½ to 1 per cent. of his sales for collecting the local checks of his customers. They may think they are saving exchange, but in the long run the merchant who sells such trade must, in self-protection, try to make this cost out of them by charging higher prices. He who wishes to buy at low prices should pay promptly and in good money at the place where the goods are sold.

I hope your article has caught the eyes of many of your readers and that they will give you their views.

Yours respectfully,

MERCHANT.

CHICAGO, June 6, 1892.

The International Ore Separating Company.

To the Editor: Several of the technical journals have recently published notices emanating, evidently, from the Magnetic Separator Company of New York, stating that a suit had been entered in the United States Court for the district of New Jersey against the International Ore Separating Company of 1 Broadway, New York, for infringement of patents. We will be greatly favored if you will publish in your columns the following true statement of the matter:

We wish to say on behalf of the International Ore Separating Company that this statement that suit has been brought against them by the Magnetic Separator Company, or by any other person, firm or corporation, is unqualifiedly false.

The International Ore Separating Company operate under patents assigned to them, which infringe no other patents whatsoever, while eminent counsel have repeatedly advised that the claims of the patents of the Magnetic Separator Company are invalid, and this the International Ore Separating Company stand ready to prove before any court of law or equity. By the actual practical result of separation, as well as by the opinion of those best qualified to judge, the separators built by the International Ore Separating Company are superior by reason of their simplicity, cheapness, durability and efficiency to allothers now on the market.

The especial features of these separators are absolutely new—the spirally wound drums of small diameter, the special forms of magnet with consequent poles, the method of transference from drum to magnets, the combination with these of a belt and rollers, together with the method of operation under the surface of water, are all completely protected by United States and foreign patents, and any infringement of these will be promptly prosecuted.

INTERNATIONAL ORE SEPARATING CO.,
HARVEY S. CHASE, Treasurer.

NEW YORK, June 18, 1892.

The factory of the Ontario Wire Fencing Company at Pictou, Ont., was burnt on the 18th inst,

THE PITTSBURGH MANUFACTURERS' SCALE.

At the convention held on Wednesday of last week in Pittsburgh between the bar iron makers of that city and the Conference Committee of the Amalgamated Association, the following scale of wages to govern a number of the rolling mills in the Pittsburgh district was presented by the manufacturers. As we stated last week, the scale is based on $4 50 per ton for boiling, while the scale for muck rolling is unchanged, being 12½ per cent. or one eighth of the straight price proposed for puddling. The scale is as follows:

Boiling.

The price for boiling, tons of 2240 pounds, will be $4.50 on a 2-cent card, to advance or decline in the same proportion as per scale book of 1891-92 (the present rate is $5.50). The following paragraph, now part of the scale, has been dropped:

2. In order to insure uniformity of iron in boiling furnaces and avoid the increasing custom of running in strong for common iron, thus increasing the hours and work of the boiler, the limit of time for each heat shall be as follows: For a single furnace, one hour and forty-five minutes; for a double furnace, one hour and fifty minutes; for Siemen's furnace one hour and fifty-five minutes, and for a double double furnace, two hours. The time shall be reckoned from the time the door is dropped after charging until the heat is ready to draw, and accidents and unavoidable detentions are not to be reckoned in. When a majority of the furnaces in any mill require more than the time specified to make their heats, due notice shall be given to the boss, in accordance with Article X of the constitution. By the word majority is meant a majority of the furnaces working hard iron. Inferior coal, which increases the working time beyond that specified above, shall be considered a grievance.

While the present scale provides for wrought iron turnings worked on the cinder bottom at $3.57 per ton, the manufacturers change it to 50 per cent. of the price for boiling. The other paragraphs in the puddling scale remain unchanged.

In the

Muck or Puddle Mill

scale the rate has been lowered with the price for boiling, since it was 12½ per cent. thereof. The manufacturers have dropped Paragraph 3 of the present scale, as follows: "When billets 1½ inches or less are rolled on a muck mill, any extra help required by the roller shall be paid by the company."

Scrapping and Busheling.

The following is the scale proposed by the manufacturers: We have bracketed the present rates.

The price for piles on boards per ton of 2240 pounds on 2-cent Western Iron Association card shall be $1.60 ($2), and to advance or decline in same proportion as per scale book of 1891 and 1892.

1. Heating piles or blooms shall be 30 cents per ton above bar mill heating.

2. Busheling on sand bottom to be 20 (50) cents per ton above the current price for piles on boards.

3. Busheling scrap and wrought-iron turnings on sand bottom to be 20 (30) cents per ton above the current price for piles on boards; this to include all light scrap, hoop, wire and what is known as Norway scrap. The company shall cut such scrap 8 to 10 inches in length for charging. (In the present scale hoop, wire and Norway scrap is included in light sheet scrap.)

4. The price for working all light sheet scrap shall be $2.25 ($2.75) per ton on a 2-cent card, and shall advance 5 cents per ton on each 1-10 advance on said card, and decline in same proportion to a 2-cent card. The company to cut such scrap 8 to 10 inches in length for charging.

5. Pipe scrap over 4 inches in diameter shall be cut from 4 to 6 inches in length before charging.

6. The scrapper to find his own help and pile his own scrap.

Heating Slabs and Shingling.

The manufacturers' scale provides the following, the present rates being bracketed:

Western Iron Association card rates.	Shingling muck iron and rehammered iron, 2240 pounds.		Shingling charcoal iron, 2464 pounds.		Heating, also shingling slabs and doubling, 2240 pounds.	
2 c. bar iron	$0.50	($0.75)	$0.62½	($0.82½)	$0.50	($0.75)
2 1-10c "	.51½	(.76½)	.64⅝	(.84½)	.52	(.78)
2 2-10c. "	53	(.78)	66⅛	(.86)	.54	(.80)
2 3-10c. "	.54½	(.79½)	.68¾	(.88)	.56	(.83)
2 4-10c. "	.56	(.81)	.70⅜	(.89½)	.58	(.85)
2 5-10c. "	.57½	(.82½)	.72½	(.91¼)	.60	(.89)
2 6-10c. "	.59	(.84¾)	.74⅛	(.93)	.62	(.92)
2 7-10c. "	.60½	(.86)	.76⅛	(.95)	.64	(.94)
2 8-10c. "	.62	(.87½)	.78⅛	(.97)	.66	(.96)
2 9-10c. "	.63½	(.89½)	.80½	(.99)	.68	(.98)
3 c. "	.65	(.91)	.82½	(1.01)	.70	(1.00)

Bar Mills.

The price for bar rolling and heating, 2240 pounds to the ton, has been cut down from 70 to 50 cents on a 2-cent card. The following paragraphs in the present scale have been dropped: "Nail plate rolling 6½ cents per ton less than bar rolling. Heating nail plate to be the same price as bar mill heating."

The following scales are new:

Grooved Skelp Bar Mills.

	Per ton of 2240 pounds.
Rolling, bar card at 2 cents	$0.40
Heating, bar card at 2 cents	.50
Catching, bar card at 2 cents	.25

Any additional help required at the furnaces or rolls shall be furnished at the discretion of the manager.

Skelp, 10-Inch and Guide Mills, 2 Inches Wide and Over.

	Per ton of 2240 pounds.
Rolling	$0.85
Heating	.50
Roughing	.25
Catching	.25

All skelp under 2 inches in width to be paid for at same price as bands or hoops of same width.

The following is the

Guide, 10-Inch, Hoop and Cotton-Tie

scale. We have bracketed the prevailing rates, and may note that the Pittsburgh scale is practically the same as the Mahoning and Shenango valley scale published in *The Iron Age* of June 9.

It is agreed that the base price at a 2-cent Western Iron Association's card shall be the straight $2.18 ($2.90) per ton of 2240 pounds for rolling on a guide or 10-inch mill. This price to include roller's, heater's, rougher's and catcher's wages, with 2 per cent. additional for each 1-10 advance on said card from 2 to 2 5-10 cent card, and for each 1-10 advance or decline above the 2 5-10 cent card 3 per cent shall be added or deducted as the case may be. The roller, heaters, roughers and catchers shall each be paid by the company. It is understood, however, that this arrangement shall in no way detract from the authority of the roller in controlling all hands on mill, including hiring and discharging, and, as heretofore, the roller shall be held responsible for the work done.

Sizes.		
3-16 rounds and squares	$8.00	($9.50¼)
7-32 rounds and squares	5.70	(7 63)
¼ rounds and squares	4.35	(5.90)
9-32 rounds and squares	3.15	(5.15)
5-16 rounds and squares	3.15	(4.40)
⅜ and 7-16 rounds and squares	2.47	(3.50)
15-32 rounds and squares	2.30	(3.35)
½ and 9-16 rounds and squares	2.18	(3.20)
⅝ and up rounds and squares.	2.18	(2.90)
5-16 half round	4 35	(9 50)
⅜ and 7-16 half round	4.35	(8.90)
⅝ and ½ half round	2.87	(4 10)
¾ and ⅞ half round	2.18	(3.50)
½ and 9-16 x 3-16 oval	4.35	(9.50)
⅜ and 7-16 oval	3.80	(5.30)
½ and 9-16 oval	2.87	(4.10)
⅝ and ⅛ oval	3.20	(8.50)
⅝ oval	2 47	(3.5)
¾ and up oval	2.18	(2.90)
⅜ half oval	4 35	(8.90)
½ half oval	4.35	(5.30)
⅝ half oval	3 40	(4.10)
¾ half oval	3.20	(3.50)
⅞ half oval	2.50	(2.90)

Nut Iron.

5-16 x ¼	$5.00	($5.90)
23-64 x ¼	5.00	(5.90)
27-64 x ⅛ x 1-16	6 63	(12.50)
27-64 x 15-16 (new)	4.50	.....
⅜ x ⅛ x 1-16	6.63	(12.50)
27-64 x 9-64	4.80	(10.00)
⅜ x ¼ to 3-16	4.35	(5 30)
7-16 x ¼	4 35	(5.30)
15-32 x ¼	3.60	(4.70)
½ x ¼ x 3-16	3.30	(4.70)
17-32 x ¼	3.20	(4.55)
9-16 x ¼	3.20	(4.40)
19-32 x ¼	3.10	(4.25)
⅝ x 5-16	3.00	(3.80)
11-16 x 5-16	2.90	(3.80)
13-16 x ⅜	2.90	(3.34)
¾ x ⅝ to ⅜ (new)	2.60	.....
¾ x ⅜ to 3-16	2.60	(3 50)
25-32 x 3-16 to ⅜	2.60	(3.35)
21-32 x 3-16 to ⅜	2.60	(3.95)
23-32 x 3-16 to ⅜	2.60	(3.65)
⅝ x ½ (new)	2.87	.....
⅞ x 3-16	2.18	(3.20)

Channel Iron.

2-inch and upward, base	$2.18	($2.90)
1⅝ to 1⅞	2.60	(3.20)
1 inch	2 80	(3.50)
⅞ x ⅝	3.10	(3.80)
⅞ x 5-16 and lighter	3.30	(5.00)
¾ x ⅝	3.20	(3.50)
¾ x 5-16 and lighter	3.50	(7.70)
⅝ x ⅜	4.00	(4.10)
⅝ x 5-16 and lighter	4.30	(9.50)

All channels No. 12 and lighter shall be paid at hoop prices.

T Iron.

1½ and upward	$2.40	($3.20)
1¼	3.00	(4.10)
1⅛	3.50	(4.70)
1	4.00	(5.30)
⅞ (new)	4.25	.....
¾ (new)	4.35	.....
⅝ (new)	5.00	.....

That any tees of unequal size should be classed thus, 1 x ¾ shall be classed as ⅛ tees.

Angles.

1¼ and upward	$2.30	1½ and upward	$2.90
1⅛	2.50	1¼ x 3/16	3.20
1	2.90	1⅛ x 3/16	3.65
⅞	3.40	1 x ⅛	4.10
¾	4.00	⅞ x ⅛	4.70
⅝	4.60	¾ x ⅛	5.90
½	6.50	⅝ x ⅛	6.80

All angles under ⅛ in thickness 10 per cent. advance on above prices.

All angles of unequal sides shall be divided. For instance, 1½ x 1 inch shall be classed with 1¼ angle.

Clip and Wagon Strap.

⅝	$2.30	($3.20)
9-16	2.30	(3.50)
½	2.35	(3.80)
7-16	2,55	(4.10)
⅜	2,60	(5.90)
5-16	3.40	(7.09)
¼	4.60	(8.89)

A more elaborate classification has been made on

Hame Iron,

the manufacturers presenting the following scale, while the men have retained the old scale, which we print below:

PROPOSED SCALE.

⅝ x No. 12 and heavier	$3.20
⅝ x Nos. 13, 14 and 15	4.00
⅝ x Nos. 16, 17, 18 and 19	5.00
¾ x No. 12 and heavier	2.60
¾ x Nos. 13, 14 and 15	2.40
¾ x Nos. 16, 17, 18 and 19	4.20
⅞ x No. 12 and heavier	2.20
⅞ x Nos. 13, 14 and 15	2.80
⅞ x No. 16, 17, 18 and 19	3.00
Bands rolled for bundling	4.00

PRESENT SCALE.

⅝ x No. 10 and lighter	$9.50
¾ x No. 10 and lighter	7.70
⅞ x No. 10 and lighter	5.90
Bands rolled specially for bundling	5.90

Ten-Inch Mill.

The 10-inch mill scale reads as follows:

¼, 17-32 and 9-16, round and square	$2.18	($3.20)
¼ and upward, round and square	2.18	.....
⅝ oval	2.47	(3.50)
¾ oval and upward	2.18	(2.90)
¾ x 3-16 and heavier	2.60	.....
⅛ x 3-16 and heavier	2.18	(3.20)
1 in. and upward x No. 12 and heavier	2.00	.....
2⅛ and wider x No. 13, No. 14, No. 15, No. 16	1.70	.....
2⅛ and wider x No. 17 and lighter	1.90	.....
9-16 billets, iron or steel	1 90	.....
⅝, ¾ and ⅞ billets, iron or steel	1.75	.....

A number of changes have, of course, been made in the classification. The

Hoop and Cotton Tie Mills

scale has similarly undergone a complete revision, and now is presented in the following form:

PROPOSED SCALE.

2⅛ and wider x Nos. 13, 14, 15 and 16	$1.70
2⅛ and wider x No. 17 and lighter	1.90
1⅜ to 2 in. x Nos 13, 14, 15 and 16	1.70
1⅜ to 2 in. x Nos. 17, 18 and 19	1.90
1⅜ to 2 in. x Nos. 20, 21 and 22	2.85
1⅛ to 1¼ x No. 12 and heavier	2.00
1⅛ to 1¼ x Nos 13, 14 and 15	1.80
1⅛ to 1¼ x Nos. 16, 17, 18 and 19	2.20
1⅛ to 1¼ x Nos. 20, 21 and 22.	3.60
15-16 to 1 in. x No. 12 and heavier	2.00
15-16 to 1 in. x Nos. 13, 14 and 15	1.90
15-16 to in. x Nos. 16, 17, 18 and 19	2.30
15-16 to 1 in. x Nos. 20, 21, 22 and 23	4.80
⅛ x N. 12 and heavier	2.20
⅛ x Nos. 13, 14 and 15	2.80
⅛ x Nos. 16, 17, 18 and 19	3.00
⅛ x Nos. 20, 21, 22 and 23	4.00
¾ x No. 12 and heavier	2.60
¾ x Nos. 13, 14 and 15	3.40
¾ x Nos. 16, 17, 18 and 19	4.20
¾ x Nos. 20, 21, 22 and 23	6.00
⅝ x No. 12 and heavier	3.20
⅝ x Nos. 13, 14 and 15	4.00
⅝ x Nos. 16, 17, 18 and 19	5.00
⅝ x Nos. 20, 21, 22 and 23	8.00
13-16 x No. 12 and heavier	2.60
13-16 x Nos. 13, 14 and 15	3.20
13-16 x Nos. 16, 17, 18 and 19	3.50
13-16 x Nos. 20, 21, 22 and 23	6.30
11-16 x No. 12 and heavier	2.80
11-16 x Nos. 13, 14 and 15	3.80
11-16 x Nos. 16, 17, 18 and 19	4.20
11-16 x Nos. 20, 21, 22 and 23	7.50
9-16 x No. 12 and heavier	4.20
9-16 x Nos. 13, 14 and 15	5.00
9-16 x Nos. 16, 17, 18 and 19	5.20
9-13 x Nos. 20, 21, 22 and 23	10.20
½ x No. 12 and heavier	4.50
½ x Nos. 13, 14 and 15	6.70
½ x Nos. 16, 17, 18 and 19	8.70
½ x Nos. 20, 21, 22, 23 and 24	13.00
⅜ x N . 12 and heavier	5.40
⅜ x Nos. 13, 14, 15 and 16	7.50
⅜ x Nos. 17, 18, 19, 20, 21 and 22	13.50
Cotton tie, iron or steel	3.20

PRESENT SCALE.

2¼ and upward to No. 15	$2.90
Lighter than No. 15	3.35
1¾ milk can hoops	4.10
1¾ and upward to No. 10	3.35
1½ and 1⅝ x ⅛	3.50
1⅝ ratchet iron	3.80
1¼ and 1⅜ x ⅛	4.10
1 x ⅛	5.30
⅞ x ⅛	5.90
¾ x ⅛	7.70
⅝ x ⅛	9.50
13-16 x ⅛	6.80
11-16 x ⅛	8 60
9-16 x ⅛	10.70
½ x ⅛	12 50
⅜ lighter than 1-16	18 00
Clips	3.50
Slats	4.10
Finger	3.50
Cotton tie	4.10

Of all the notes to the hoop and cotton tie scale, only the two following have been retained, thus doing away with all restrictions as to what shall constitute a day's work:

Note No. 1. When making cotton ties during the three summer months, June, July and August, the company shall pay heater's helper at the cotton tie furnace, and an extra rougher and catcher at the cotton tie rolls—that is, one man at the rolls who shall assist both rougher and catcher.

2. All half ovals below regular thickness shall be paid for at same price as bands of same gauge and width.

The old notes were as follows:

2. Four hundred and ten bundles of cotton tie shall constitute a day's work for every turn in the week, except Saturday, and for Saturday 325 bundles of cotton tie shall constitute a day's work.

3. All sizes made from a regular 2-inch and lighter reworked billet made from all muck iron; all steel hoops made from 1¾ inch and lighter reworked steel billet, all steel product from 1¼-inch and lighter steel billet, and cut to regular weight, 25 cents per ton less for rolling, 12½ cents per ton for heating, 6¼ cents per ton less for roughing, and 6¼ cents per ton less for catching, be paid.

4 All half ovals below regular gauge, one-fourth the thickness of its width, shall be paid for as follows, the same to advance and decline as per regular scale:

Size.	Roller.	Heater.	Rougher.	Catcher.
⅝	$5.50	$2.75	$1.37½	$1.37½
½	5.25	2.62½	1.31¼	1.31¼
⅜	4.25	2.12½	1.06¼	1.06¼
¾	2.95	1.47½	.73¾	.73¾
⅛	2.50	1.25	.62½	.62½

5. For cut hoops, No 10 and lighter, the following extras shall be paid: Rolling, 15 cents; heating, 7½ cents; roughing, 3¾ cents, and catching, 3¾ cents per ton.

7. Any smaller sizes not enumerated in the 10-inch scale shall be paid the same as guide mill prices.

8. The prices paid for making odd sizes not enumerated in the scale shall be the mean between the next higher and lower prices.

9. Where a mill averages over $32 per day a third rougher shall be employed during the months of June, July and August on demand of roller, rougher and catcher. Said extra man shall assist both rougher and catcher and shall be paid one-half by roller and one-half by rougher and catcher.

10. The night-turn roller shall receive two-fifths of the roller's wages on said night turn.

Plate Mill.

The price for rolling common iron on plate mills is proposed at 50 cents per ton of 2240 pounds, as compared with 72 cents, which is the present rate. The heating is put at 58 cents, when the present rate is 80 cents. The extras remain unchanged, except that the following clauses have been omitted:

5. All rerolled iron shall be double common prices.

7. All iron or steel rolled on a plate mill, sheared to patterns of irregular shape, or circles, shall be paid for at the weight of the square sheet. This clause shall not apply to boiler and tank heads, or any plates or sheets where the waste does not exceed 10 per cent. above square sheets; but where the waste does exceed 10 per cent. above square sheets the company agrees to pay 20 per cent. extra above scale prices.

The manufacturers have added the following:

8. The above prices are for ordinary plate and tank mills; in mills working three furnaces, or others fitted with special appliances or working under conditions whereby large product is obtained, special prices will be made.

Structural Mills.

We tablulate below the rates on 20 and 18 inch mills, bracketing the present rate of wages:

These scales are based on a 2-cent Western Iron Association card, and the prices paid all men working thereon advance 2 per cent. for every additional 1-10 cent advance of said card, and 2 per cent. decline for each deduction of 1-10 cent from said card, but not to go below the price herein specified on a 2-cent card.

Twenty-inch Mills.

	Per ton of 2240 pounds.	
Heater	$0.46	($0.70)
Roller	.43	(.70)
Catcher	.33	(.43¾)
Heaters' helpers, each, front	.15½	(.19)
Heaters' helpers, each, back	.13¾	(.17)
Pilers, each	.11⅛	(.17)
Chargers, each	.04⅜	(.07)
Shearman	.06	(.08¾)
Run out hook, front	.06	(.09)
Rough and tumble hook, front	.06	(.09)
Point in hook, front	.06	(.09)
Point in hook, back	.06	(.09)
All other hooks, each	.05¾	(.08½)
Buggyman	.06¾	(.10)
Straightener, each	.06¼	(.09½)
Sawman	.06⅛	(.09½)

Ten per cent. to be deducted from all unfinished iron for crops.

Eighteen-inch Mill.

Heater	$0.46	($0.70)
Roller	.43	(.70)
Catcher	.33	(.43¾)
Heaters' helper, output two fur	.10½	(.13½)
Pilers and chargers, each	.08	(.12)
Buggyman	.08	(.12½)
Hookers, each, front	.08	(.12½)
Hookers, each, back	.07¾	(.12)
First straighteners, each	.08	(.12½)
Second straighteners, each	.07¾	(.12)
Shearman, each	.14½	(.22)

Ten per cent. to be deducted from all unfinished iron for crops.

Lightning Rod.

The following is the scale, compared with the old rates, which are given in brackets:

¾ Nos. 2 and 3, 86 pounds and over per 250 feet	$3.50	($4.05)
11-16 and 23 32 No. 4, or all sizes from 71 to 85 pounds per 250 feet	3.90	(4.50)
9-16 No. 5, or all sizes from 62 to 70 pounds per 250 feet	3.50	(6.50)

OBITUARY.

J. H. ROELKER.

J H. Roelker, president of the Roelker Stove and Plow Company, Evansville, Ind., died at 5 o'clock on Thursday afternoon, June 9. Mr. Roelker had been in ill health for several years past, and his death was not altogether unexpected. He was born in Osnabrueck, kingdom of Hanover, May 11, 1811, and came to this country in 1835, landing in Baltimore on October 1, after a tempestuous voyage. The distance between Baltimore and Pittsburgh was made on foot, and in the latter city he found employment as a waiter boy in a restaurant. After engaging in various pursuits he found himself, on July 20, 1840, in Cincinnati, where he commenced work as a stove blackener. He determined to learn the business of stove manufacturing, and for ten years he was engaged about the foundries learning all the various details. In 1850 he became foreman of the foundry of W. C. Davis & Co., of which he had charge for nearly three years. His next position was in connection with Chamberlain's Foundry. He finally, however, determined to go to Evansville and establish works of his own. He arrived in that city in 1854, and purchased the present place on Main street. His partners were J. B. Mesker, F. W. Brinkmeyer and a Mr. Meier, the business being conducted under the firm name of Brinkmeyer, Mesker & Co. At the end of the year the first two retired and a Mr. Klusman entered the firm. A few years later John H. Feldwisch took Mr. Brinkmeyer's place and H. F. Blount bought the interest of Mr. Klusman, the firm name then becoming Roelker, Blount & Co. In the year 1869 Mr. Blount sold his interest in the business to J. H. Roelker, J. W. Roelker and J. H. Monig, the firm then being known as J. H. Roelker & Co. Two years later William H. Roelker was admitted. On August 1, 1891, the firm was incorporated as the Roelker Stove & Plow Company, with J. H. Roelker president. Mr. Roelker was somewhat prominent in political life, for seven years serving as Councilman, and for one term in the State Legislature. In 1844 he was alternate delegate to the National Republican Convention. Mr. Roelker was a loyal and true friend, and was held in high estimation by all who knew him. The funeral services were held at his late residence on the 11th inst.

JAS. MORGAN, a well-known resident of Pittsburgh, died at his home in Shady Side in that city last week after a lingering illness. Mr. Morgan was a well-known

mill worker, and for many years was superintendent of the plant of the American Iron and Steel Company of Jones & Laughlins, Limited, at Pittsburgh. He was a member of the American Institute of Mining Engineers, American Institute of Mechanical Engineers, and of the Engineers' Society of Western Pennsylvania.

JOHN KENDALL, reputed to be the oldest maker of thermometers in this country, died at his home in New Lebanon, N. Y., on the 19th ult. Mr. Kendall was 83 years old, and up to within three weeks of his death had been actively engaged in business. Mr. Kendall embarked in business in 1831, and 50 years ago made, we are advised, some well known instruments for the Smithsonian Institute at Washington

HENRY W. SHEPARD, late president of the Iron Clad Mfg. Company, New York City, died recently at his home in Mannsville, N. Y. Mr. Shepard was in his fifty-fourth year. Injuries received by him in the Ashtabula disaster led to his early death. The concern of which Henry W. Shepard was the head has by his efforts become one of the notable manufacturing establishments of the country, and stands a fitting monument of his untiring energy, perseverance and great business ability. His associates in business, as well as those still closer to him, will sorely miss this genial and guiding spirit from among them.

GEORGE F. GREEN, the inventor, died from intermittent fever on the 7th inst., at Kalamazoo, Mich., aged 60 years. He invented the first self binder, first electric street car, and pneumatic shutter for photographers. He was working on an electric car to take the place of the trolley wires at the time of his death.

COL. GEORGE D. DODDS, superintendent of the Southwest Virginia Improvement Company, died on the 7th inst., at Elkhorn, W. Va. Colonel Dodds was the superintendent of the famous Midlothian coal mines during the horrible explosion there many years ago.

JOHN WAMPLER, one of the best known residents of McKeesport, Pa., died in that city last week after a long illness. Mr. Wampler was 65 years of age, and for many years was chief engineer in the McKeesport Iron Works of the W. Dewees Wood Company, at McKeesport.

PERSONAL.

Leo Bullions, who for several years has been night superintendent of the 119-inch plate mill of the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa, has been promoted to the position of day superintendent. W. W. Mehling succeeded him as night superintendent. These changes have been made necessary by the promotion of W. F. Covey to the entire charge of the armor-plate department.

Kenneth Robertson has resigned as furnace manager at Secaucus, N. J. He goes to West Superior, Wis.

Jay C. Morse of the Illinois Steel Company and H. C. Frick of the Carnegie Steel Company were to visit the Sparrow's Point plant of the Maryland Steel Company this week.

C. Cayley, one of the inventors of the Cayley-Courtenay process of shell manufacture, returned to England this week after a conference with E. W. Bliss and associates.

B. G. Clarke has assumed the duties of the presidency of the Lackawanna Iron & Steel Company, in the place of E. Hatfield, who retains a nominal connection with the company.

Freights on Southern Pig Iron.

The Queen and Crescent route has issued Eastbound pig-iron tariff No. 3, effective June 16, giving rates on pig iron in carload lots from Southern furnaces to points in the Northeast. The only changes are in the rates from Dayton and Rockwood, Tenn., to points in Eastern Pennsylvania, as given below:

To	From Dayton and Rockville, Tenn. Per ton 2268 pounds.
Pennsylvania :	
Allentown	$4.40
Conshohocken	4.21
Danville	4.40
Easton	4.40
Harrisburg	3.67
Lancaster	4.06
Lebanon	3.93
Philadelphia (all rail)	4.35
Pottstown	4.21
Pottsville	4.40
Reading	4.21
Steelton	3.80

The four scales sent in by the Carnegie Steel Company, Limited, to govern wages for three years, commencing July 1, at the Homestead Steel Works, at Homestead, Pa., were under discussion by the Amalgamated Association on Tuesday, the 21st inst. Advices indicate that the scale as presented by the firm will not be accepted by the men, and if insisted on there will be a strike, as the firm have announced that the scales must be signed on or before the 24th inst. It is impossible to state at this time whether conferences will be held between the Conference Committee of the Amalgamated Association and the firm or not. It is the impression that if the scales are not signed on or before the above date the Carnegie Steel Company, Limited, will refuse to treat with the men as members of the Amalgamated Association. We are advised that a number of the employees at the Homestead Steel Works, including the engineers, boiler makers, carpenters, pattern makers and other skilled labor outside the ranks of the Amalgamated Association, have signed the scale of wages as prepared by the firm. The scales signed by these men went into effect on June 20, and will continue in force for three years, or until June 20, 1895. It is the belief that the action of these men in signing the scale has materially weakened the ranks of the Amalgamated Association should a conflict occur between the firm and their men, as it is certain that if a strike occurs the workmen could have made a much stronger fight had they all been united. As it is, however, a large number of men have signed the scale, and will continue right on at work regardless of any action taken by other employees who are members of the Amalgamated Association. Out of about 3500 men employed at the Homestead Steel Works only 280 are affected by the reductions proposed in the new scale. From the fact that the number of men affected by the reduction is so small, it is certain that it will be much easier to find men to take their places should a strike occur than it would be if a larger number were involved. Up to this writing no request for a conference with the Carnegie Steel Company, Limited has been received from the Amalgamated Association.

The final adjustment of the affairs in the DeBardeleben and Tennessee Coal & Iron Company was effected at the directors' meeting, held on the 16th and 17th insts. All differences were settled and the various securities of the companies were deposited with the New York Surety Trust Company for exchange under the terms of the agreement. At the last meeting of the board the subject of the purchase of the Aldrich coal property, consisting of 45,000 acres of land, partially developed, was acted upon. It was shown that the Aldrich people were anxious to sell, and it was decided, should equitable terms be agreed upon, to buy. A committee was appointed for the purpose of examining into the value of the property, the nature of its titles, and of the company's organization. With the report will be made a recommendation as to the amount and the method of purchase. It will be some weeks before the matter will again come before the directors for consideration.

Last week Congressman Payne read, on the floor of the House of Representatives, the following from Norton Brothers of Chicago: "Have just booked orders from Fairwood Tin Plate Works, Gowerton, near Swansea, Wales, for two sets Norton automatic palm oil tinning machines, thus carrying coals to Newcastle. The order was placed by managing partner of works after personal observation of the practical working of our machine at Maywood. The manager declared that the invention of the machine has solved the problem of making a perfect tin plate automatically with palm oil instead of acid flux and without skilled labor."

Experts are carefully estimating the probable reduction of the cotton crop to be effected by the corporation of planters who seek to avoid excessive production. An estimate telegraphed from Atlanta, to which much importance is attached, reckons the decrease in acreage at 12 per cent. or 1,000,000 bales, which is perhaps a fair allowance, if it be taken to include the decrease from all causes, and this estimate is in agreement with that of the *Financial Chronicle*, which makes the decrease 11.88 per cent. The figures, therefore, point to a crop of not far from 6,800,000 bales, to which must be added at least 1,400,000 bales of the old crop still available. Secretary Rusk reports the reduction of acreage 18 to 19 per cent.

On Monday, the 20th inst., notices were posted at all the limestone quarries throughout the Mahoning and Shenango valleys that, commencing on July 1, there will be a reduction of 10 per cent. in wages to correspond with the recent reduction of 10 per cent. made in the price of blast furnace labor. It is estimated that 3000 men will be affected by the reduction.

Curtis & Curtis of Bridgeport, Conn., manufacturers of the Forbes die stocks, pipe cutting and threading machinery, have just received word from the United States Government that their heavy power pipe cutting and threading machines have been chosen for use in the navy yard at Boston. These machines have a complete range from 2½ to 8 inches and they are now engaged in filling a large order for them.

The case of the Eureka Mower Company of Utica, N. Y., *vs.* the Eureka Mower Company of Towanda, Pa., and Elisha R. Brace *et al.* has been settled by stipulation. The 500 shares of stock of plaintiff's company vested in Elisha R. Brace are, with transfers, to be delivered to E. D. Matthews for the latter and sold in Mr. Matthews' office to the highest bidder.

The worthlessness of Anti-Trust laws has again been demonstrated by the victory of the Whisk Trust in the United States Circuit Court at Cincinnati. One of the United States Judges went so far as to express the opinion that all of this kind of legislation, whether Federal or State, is unconstitutional.

MANUFACTURING.

Iron and Steel.

On June 1 the Wheeling Steel & Iron Company assumed control of the business of the Belmont Nail Company, the Wheeling Iron & Nail Company, the Benwood Iron Works, and the Wheeling Steel Works, all of Wheeling, W. Va. All business transactions are now made by the various companies for the account of the Wheeling Steel & Iron Company. It is expected that all the necessary arrangements for the consolidation of the above four companies, under the firm name of the Wheeling Steel & Iron Company, will be completed by July 1, and the organization will become effective on that date.

The new three Cowper-Kennedy hot blast stoves, recently erected by Julian Kennedy at the blast furnace of the Stewart Iron Company, Limited, Sharon, Pa., were tested last week, and worked in a highly satisfactory manner. The blast furnace of the Stewart Iron Company, Limited, is now one of the best equipped in the Shenango Valley. Although the stack is ready for blast, it will not resume operations until there has been a decided improvement in the iron market.

The Lewistown Tin Plate Works, Joliet, Ill., have changed hands and will hereafter be known as the South Joliet Tin Plate Company. Tin plates will be made at these works within 90 days

Mary Furnace of the Ohio Iron and Steel Company, at Lowellville, Ohio, which has been in blast for more than two years, will be blown out during July, in order to make necessary repairs.

The establishment of John Hamilton, at Pittsburgh, manufacturer of Hamilton's best redipped roofing plates, was damaged by fire last week to the extent of about $10,000. The loss is fullycovered by insurance.

The Standard Mfg. Company of Pittsburgh, with works in Allegheny, Pa., manufacturers of plumbers' supplies of all kinds, have just concluded the purchase of a large tract of land in the lower part of Allegheny, upon which they will erect new works. As soon as the new plant is completed, the machinery will all be removed from the works on River avenue, Allegheny, to the new building.

Carnegie Brothers & Co., Limited,of Pittsburgh, have decided to erect a large foundry in connection with the Edgar Thomson Steel Work at Braddock, Pa. Plans are now being prepared and work will be commenced in a short time.

San Diego, Cal., will make another effort to locate an iron works at that place. It is now proposed to turn over the $200,000 subsidy raised some months ago for Dr. J. C. Eames and other Pittsburgh parties to an English company contemplating the erection of a plant for the working of Tempustete, Lower California, iron ore in that city.

The Pioneer Furnace of the Iron Cliffs Company, at Negaunee, Mich., has closed down after an almost uninterrupted blast of 28 years. The old stack is now completely worn out and unfit for further use, and will be succeeded, it is expected, by a larger and modern plant, but it has not yet been decided whether to rebuild at Negaunee or at some other point in Michigan.

The Midvale Steel Company of Nicetown, Philadelphia, have completed plans for a three-story brick and granite machine shop, 198 x 112 feet.

It is stated that the large furnace of the Carnegie Iron Company, at Johnson City, Tenn., will not be put in operation until there is an improvement in the iron market.

The proprietors of the Gracey Woodward Iron Furnace, at Clarksville, Tenn., have started the fires to dry it out to get ready for blowing in. They are also getting in a large supply of ore and coke. Their new ore washer has been completed.

The Gadsden Iron Company, Gadsden, Ala., state that their furnace will go out of blast some time in July, and remain idle until there is an improvement in the iron market.

The stockholders of the Burden Iron Company on Wednesday, June 15, elected the following trustees: James A. Burden, I. Townsend Burden, John L. Arts, Richard Irvin and Nicholas J. Gable. At a subsequent meeting the trustees elected the following officers: President James A. Burden; general manager, John L. Arts; secretary, Nicholas J. Gable.

Machinery.

A reorganization has been effected of the Niles Tool Works of Hamilton, Ohio, well known as manufacturers of iron and steel working machinery, railway, car, boiler and machine shop equipments, &c. The appraisers value the property, exclusive of the good will at a little over $2,000,000, at which sum the new concern will be capitalized, equally divided between preferred and common stock. The directors of the new company will be Matthew Addy, W. P. Anderson, Thomas T. Gaff, Alexander Gordon, Frank J. Jones, Henry Lewis, R. S McKinney, James G. Parker and George T. Reiss. Mr. Gordon will be the president, Mr. Gaff vice-president and Mr. McKinney secretary and treasurer.

The Stirling Company of Chicago, with works at Barberton, Ohio, manufacturers of water tube safety boilers, have just closed with the Armour Packing Company of Kansas City, Mo.,for 1600horse-power Stirling boilers. They also received an order recently from the Pueblo Smelting and Refining Company of Pueblo, Col., for one 250 horse-power water-tube boiler. An office is now being erected by this firm in connection with their works at Barberton in order to facilitate the handling of orders.

The Westinghouse Electric & Mfg. Company of Pittsburgh have declared a semi annual dividend of 3½ per cent. on the preferred stock, payable at the office of the company on and after July 1 next.

The F. D. Cummer & Son Company have been chartered at Cleveland, Ohio, with a capital stock of $50,000, for the purpose of manufacturing and dealing in all kinds of machinery.

The Pittsburgh Heating Supply Company of Pittsburgh have been granted a charter, with a capital stock of $20,000. The directors are J. A. Shields and F. M. Mechling of Greensburg, Pa., and G. C. Blackmore of New York.

The firm of Jos. Hall & Co., proprietor of the Richmond Iron Works, Richmond, Va., having dissolved, the business will be continued by John Chamblen, Alex. Delaney and James H. Hall. Mr. Chamblen has been with Mr. Hall, an equal partner, since the establishment of the plant. Alex. Delaney was a member of the Tanner-Delaney Engineering Company They have purchased 1½ acres of land at the Richmond terminus of the Baltimore & Ohio Railroad, where they will have a switch running into their works. They are now contracting for a building 104 x 80 feet, which will be pushed to completion as rapidly as possible.

The Berlin Iron Bridge Company of East Berlin, Conn., are now building a new machine shop for the Solvay Process Company, at Syracuse, N. Y. The building will be 50 feet wide by 300 feet long and three stories high. The side walls will be of iron and brick (combination construction), with iron floors and iron roof, covered with the Berlin Company's patent anti-condensation roofing.

Edwin Harrington, Son & Co., Philadelphia, report business as very satisfactory. Their shops are in full work and orders constant. Special machinery is being made by them for the Standard Hub Company's manufactory, now being established at Marion, Ind. They have also just delivered two large locomotive drill presses, which have been made at their works for the Pennsylvania Railroad stations at Columbus, Ohio, and Fort Wayne, Ind.

The Campbell & Zell Company of Baltimore, Md., have been awarded the contract for one 250 horse-power Zell improved water-tube safety boiler by the Fort Wayne Electric Company of Baltimore City, and one 30 horse-power boiler for F. W. & F. B. Wildes of Boston, Mass.

Gifford Bros., founders and machinists, of Hudson, N. Y., have enlarged their foundry and its facilities, and added a boiler department to their pattern, machine and forge departments. A large amount of new machinery has been added to the plant, and the firm are now in a position to give immediate attention to stationary and marine engine and boiler repairing. The plant now cousists of a machine shop, embracing 1540 square feet of floor space, forge and boiler shop, containing 698 square feet of floor space, a foundry, having a floor space of 11,200 square feet, and a pattern shop, 1540 square feet. Each department is equipped with the most approved tools, and modern methods are employed. The firm have recently opened a New York office at 5 Beekman street.

Dobie & Stewart, iron founders and general machinists, of Thorold, Ont., have decided to locate at Niagara Falls, N. Y. They have leased 1 acre of ground of A. J. Porter on the Portage road for a term of ten years, and will erect thereon a foundry and machine shop suitable for their work. The erection of these buildings will probably begin at once.

The Snow Steam Pump Works of Buffalo, N. Y., are in a very prosperous condition. Although they have not been in manufacturing existence quite two years, an enlargement of the plant has been found absolutely necessary. The capital stock has been increased to $250,000, and with the increase will be erected a splendid new machine shop. It will be one of the largest in the city, 300 feet long, 90 feet wide and two stories high. It will be built of brick and iron and fitted up with the very latest machinery and general facilities for the construction of the Snow steam pump. The contract for the iron roof has been awarded to Riter & Conley of Pittsburgh, Pa. The same firm also prepared the plans and specifications for the building proper. At present the machine and pattern shops, iron and brass foundries give employment to 160 men, and when the new shops are completed it is expected that close on 400 men will be required to assist in the output of Snow steam pumps. Some idea of the work done may be gained from the fact that when the addition to the shops is completed the firm will be able to turn out a pumping engine able to handle 20,000,000 gallons of water daily. The company's products have come to be recognized as of a high grade both in this country and in Europe, where they have several large-sized pumping engines in successful operation. At the present rate of progress there is every indication that this industry will take a leading position among Buffalo manufactories before many years. It is excellently situated, with every facility for enlarging its works.

E. M. Lewis, proprietor of the Midway Machine Company, at Anniston, Ala., has bought the machinery of the Rollstone Machine Company, at Bessemer, Ala., and will use it in his new plant at Oxanna, Ga.

The National Mfg. Company have been organized at Knoxville, Tenn., to manufacture an engine recently patented by Mr. Tubbs of Front Royal, Ga.

The Combination Wrench & Pipe Tongs Company have been chartered at Pensacola, Ala., with $5000 capital, by W. F. Creary and associates for the manufacture of wrenches, pipe tongs, &c.

The Phœnix Foundry Company, Chattanooga, Tenn, manufacturers of machinery castings, report a good business and are contemplating an addition to their plant.

The Sioux City Engine Works, situated at Leeds, Mo., announce that under the management of C. M. Giddings, the originator of the Giddings plain slide valve, new and larger works have been recently built, heavy and improved modern machinery added and the capacity increased, making the works the largest and best equipped west of the Mississippi River. The Corliss type engines made by the company have been re-designed, the frame strengthened, the shaft made larger and the fly wheel made heavier. Changes have also been made in the dash pot, valve gear and governor, with a view to adapting the engines to the heavy duty of electric light and power service. These engines are made in sizes from 75 to 1500 horse-power, either simple, compound or compound condensing. The works are also building the improved Giddings automatic, with Giddings valve, in both Porter and Girder type frame, in sizes from 20 to 250 horse-power. This type of engine is especially adapted to smaller lighting and power plants, mills, factories and isolated work in city buildings. They have recently opened a branch office in Room 513, Security Building, St. Louis, in charge of W. I. Brock.

The Columbia Mfg. Company, of Buffalo, N. Y., have been incorporated, with a capital stock of $15,000. The business and offices will be in Gowanda, and the object of the firm is the stamping of metals and making of plated work.

The Lake Shore Foundry of Rochester, N. Y., has been awarded the contract for furnishing 900 tons of straight pipe and 25 tons of special pipe for the city at a cost of $20,480.60.

Application has been made to the court by John Eickersgoff, stockholder, for a dissolution of the Triumph Compound Engine Company of Cincinnati, Ohio. The stockholders allege that the capital stock is $75,000; that no dividends have been paid for the three years that have elapsed since the company were organized, and that the debts due now amount to $30,000.

The Wais & Roos Punch and Shear Company have been incorporated at Cincinnati, Ohio, with a capital of $50,000, to manufacture metal workers' machinery and tools.

The Excelsior Machine Company's plant at Tonawanda, N. Y., has been completely destroyed by fire. The loss is placed at $35,000, covered by an insurance of $10,000. The fire is supposed to have been of incendiary origin.

The Leetonia Forging Company of Leetonia, Ohio, have been incorporated, with a capital stock of $100,000.

Hardware.

The Standard Hub Company have been organized and chartered under the laws of Pennsylvania for the manufacture of hub blocks fo

wagons, &c., by an improved process. The company are erecting a brick factory building 150 x 60 feet, at Marion, Ind., in which they will place an 80 horse-power engine, two 80 horse-power return-flue boilers, and other special machinery. The engines and boilers are already ordered, and the special machinery is under construction in the shops of Edwin Harrington, Son & Co., at Philadelphia.

The Christy Knife Company, Fremont, Ohio, who began the manufacture of the Wonderful Christy Knife less than a year ago, are employing over 70 hands in their production. The company are just putting on the market a new form of knife, especially designed for carving meats, &c., and are now producing four styles. The company refer to the rapidity with which these goods have been introduced as being beyond their most sanguine expectations.

The Kenton Lock Mfg. Company, Kenton, Ohio, advise us that they have just completed another large addition to their main buildings, making the fourth in two years. They are also erecting a brick foundry building 100 x 55, which they hope will give them sufficient capacity to fill orders promptly, which they state they have been unable to do for the past six months. A new catalogue replete with illustrations of new goods will be ready for distribution July 1.

Miscellaneous.

The Hecla Coke Company of Mount Pleasant, Pa., have been chartered, with a capital stock of $50,000.

The works of the Superior Mfg. Company, manufacturers of pumps at East Superior, Wis., have been damaged by fire to the extent of $40,000, which is double the insurance.

The addition to the Wason Car Works at Chattanooga, Tenn., has been completed. The company have a large number of orders on their books and are running full in all departments.

The business of the Stuart & Peterson Company of Philadelphia promising soon to outgrow their present premises in Thirteenth and Noble streets, the company are negotiating for the purchase of a lot of 5 acres in the vicinity of Philadelphia, with the view of erecting large manufactory buildings with adequate facilities. They are about to introduce several new lines of goods and have lately added a number of articles to the list of their productions, notably a 20-gallon oblong boiler and 8, 10 and 12 gallon round boilers in plain, bright, tinned and enameled iron. The Stuart & Peterson Company have of late succeeded in establishing a very promising South American connection and are placing their goods in Brazil, the Argentine Republic and other States. Their agent has just returned from an extended and satisfactory tour through the Southern Continent.

The Valley Pump Company of Easthampton, Mass., will build a 1,000,000-gallon duplex pump, to be run by power, for the new water supply for that town. The reservoir will be 252 feet above the pump.

The Colorado Coal & Iron Company's Board of Directors, at a meeting held on the 22d inst., accepted the resignation of President E. J. Berwind and elected C. F. Meek to fill the vacancy. Mr. Berwind was given the chairmanship of the Board of Directors. In a talk with President-elect Meek an *Iron Age* reporter learned that the examinations of the different lands, plants and other improvements of the Colorado Coal & Iron properties was making very favorable progress, and would be terminated within a short time. A Board of Arbitration will then hold a session for the purpose of adjusting differences; a basis of exchange will be agreed upon, and the consolidation effected. He has recently examined properties with a view of determining their possibilities, and states that the amalgamation will put an end to ruinous competition, promote development, and in addition to benefiting each party will greatly profit the State of Colorado. He states that the stories so assiduously circulated this week for stock jobbing purposes, to the effect that George Gould would assume the management of the consolidated properties, was false. He said that Mr. Gould would be identified in no way whatsoever with the management.

Trade Publications.

VERTICAL, HORIZONTAL, HOISTING AND MARINE ENGINES AND BOILERS form the subject of a catalogue by Orr & Sembower (Incorporated) of Reading, Pa. The facilities of this company have been so increased lately by the addition of special machinery that they are in a position to promptly meet all demands. A second catalogue by the same company describes vertical and horizontal tubular boilers, mud and steam drums, &c.

THE MCNAB & HARLIN MFG. COMPANY, 56 John street, New York, have just issued an illustrated circular of special globe and angle stop and check valves. While alike in principle and design to those heretofore supplied by them, they are constructed much heavier in every way on account of the increased use of higher pressure. Sizes above 2 inches are made with bonnet bolted on, and 2 inches and under with bonnet screwed on, unless otherwise ordered. These valves are furnished with screwed or flanged ends, as required.

THE BEAUDRY TOOL COMPANY of 48 Congress street, Boston, have issued a catalogue of their duplex forging press and cylinder power hammer. The foremost claim made for the latter is the superior elasticity of the blow struck by it. This is accomplished by a new device that is both simple and effective, which allows the hammer the greatest freedom of throw on the down stroke, but the instant the blow is struck the hammer is made to rebound so quickly that the work is not cooled in the least. The carrying frame is guided by an entirely new parallel motion which requires no adjusting, and insures absolute smoothness of action as well as durability. All parts requiring it are so arranged that they can be adjusted instantly and with the least possible trouble. The hammer always stops at the upper end of the stroke, leaving the anvil clear and ready for the work. The duplex press consists of two plungers on one crank shaft, so connected that either plunger may be worked independently, or they may be run together, or either may be used as shears, or press, or punch, while the other is in use for the same or other purposes. Through its whole stroke the plunger is under the perfect control of the operator. By a simple device the plungers can be lowered to meet the dies, or to any other point of the stroke, while the shaft is running, and thus the punch may be brought exactly to a prick point or scratch mark.

UNDER THE TITLE "Efficient Power Pumps and their Application" the Goulds Mfg. Company of Seneca Falls, N. Y., fully describe and handsomely illustrate their triplex and rotary pumps and the many places in which they can be used to advantage.

The Railway Age and Northwestern Railroader of Chicago has issued a new edition of its Railway Officials' Directory. This is a book of 175 pages, containing the addresses of chairmen of boards, presidents, general managers, general superintendents, purchasing agents, chief engineers, superintendents of motive power, master mechanics, and master car builders of all roads in the United States, Canada and Mexico. It is neatly printed, bound in flexible leather covers, is of pocket size, and is a volume that will be highly appreciated by a large class of persons whose business interests bring them in communication with railroad officials.

FRANK BURGESS, proprietor of the Boston Gear Works, Boston, Mass., is distributing a neat little souvenir memorandum book advertising his gear wheels and gear cutting. His specialties are noiseless fiberoid gears, which he claims are superior to iron, raw hide or brass, for high speed gears and pinions.

JOHN WOOD, JR., of Conshohocken, Pa., describes the water-tube boiler made by him in a late catalogue. This boiler is so designed as to afford easy accessibility to all parts, and is so constructed that there are no cast-iron joints exposed to the fire.

WE HAVE RECEIVED from the Goulds Mfg. Company of Seneca Falls, N. Y., advanced pages selected from a special catalogue of power pumps and their applications. Illustrations and descriptions are presented of triplex electric power pumps for elevations to 200, 300 and 350 feet; triplex power suction pumps and others. Attention is called to the advantage, especially in pumping against great heads, of keeping the column of water in constant motion, and not stopping and starting it at every revolution of the pump. The triplex method of construction insures the column of water moving at a certain uniform velocity.

A PAMPHLET JUST RECEIVED describes the Paine extensometer, which is made by Riehlé Bros. Testing Machine Company of Philadelphia. The instrument is made to read from thousandths up to ten-thousandths of an inch, and finer if necessary, by means of a vernier. It operates on the bell-crank lever principle and magnifies the sketch in proportion to the arms of the lever employed.

Current Technical Literature.

The following list of articles on technical subjects covers the most important papers which have appeared in recent issues of current publications, having special reference to the metallurgy or manipulation of iron and steel or related subjects. The names of the periodicals are given, so that if any person desires to secure a copy of an article he can address the publication direct:

Plat Portable Tilting Furnaces. By Henri Mamy. *Le Génie Civil*, April 30.

The Efficiency of the Steam Superheater. By J. Reischle. *Zeitschrift des Vereines Deutscher Ingenieure*, April 3 and May 7.

Seamless Steel Reservoirs. By Von Tschudi. *Glaser's Annalen*, June 1.

The Microscopic Investigation of Metals. By Professor Martens. *Zeitschrift des Vereines Deutscher Ingenieure*, June 1.

Theory and Practice of Injectors. By E. Koerting. *Zeitschrift des Vereines Deutscher Ingenieure*, May 14.

Electricity as Applied to Mining Operations. *Industry*, June.

Structure of Steel Rails. By Prof. A. Martens. *Stahl und Eisen*, May.

Universal Mills. *Stahl und Eisen*, June.

The Air Compressors of the Paris Company. A description of a plant built by Schneider & Co. of Creusot, with Babcock & Wilcox boilers and compound vertical air compressors driven by triple-expansion engines, of which four of 2000 horse-power each are now in place, the entire plant being laid out for 24,000 horse-power. *Genie Civil*, May 21.

A New Three-Wire System. By H. Ward Leonard. *Electrical Engineer*, June 8.

The Durham Miners' Strike. Giving statistics showing that the number of men idle was 90,000 at the collieries and 27,000 outside of the coal trade. *Colliery Guardian*, May 27.

Draft Gear for Freight Cars. By D. L. Barnes. A paper read before the New York Railroad Club. The *Railway Review*, June 4.

The Research Committee on Marine Engine Trials. Report by Prof. Alex. B. W. Kennedy, Institute of Mechanical Engineers. *Industries*, May 27.

The Last of the Broad Gauge. Full account, with many photo-engravings, of the changing of the track of the Great Western Railway of England from broad to standard gauge. *Engineering*, London, June 3.

Lift Bridge over the Harlem River. Detail drawings of temporary lift bridge, built by the New York Central & Hudson River Railroad. *Railroad Gazette*, New York, June 10.

Electricity at the Belmont and Sheridan Mines, Telluride, Col. Electrical work consists in lighting the inclines, the ore house, boarding house, tunnel and main shaft, in furnishing power for the ore crushers and for hoisting. Illustrated. *Electrical Engineer*, New York, June 8.

New Thomson-Houston Direct-Acting Electric Hoist, designed to raise a load of 10,000 pounds from a depth of 2500 feet in one minute. Perspective view. *Electrical Engineer*, New York, June 8.

Air Pyrometers. Based upon the expansion of air. Forms designed by Professor Wiborgh. Described by John Crum in paper before the Institution of Engineers and Shipbuilders in Scotland. Reprinted in *Industries*, London, May, 27.

TRADE REPORT.

The possibility of a strike of some duration in the Western mills is telling on the Iron and Steel markets. It has adversely affected Pig Iron, and has led to a rush of work to the Western mills for delivery prior to July 1, and is bringing orders to the Eastern mills for delivery after that date. The opinion seems to prevail in the trade that both parties in the controversy, so far as the Iron mills are concerned, have made extreme demands in order to give themselves leeway in subsequent negotiations. In the Steel trade the situation seems a little graver. Rails, of course, are not affected.

In Pig Iron the Southern furnaces have in the West succeeded in placing a good deal of tonnage, by lowering prices to the lowest notch yet reached. Heavy sales are reported from Chicago, Cincinnati and Louisville, Gray Forge having been sold down to $8.50, Birmingham. Some of the leading interests did not, however, participate in these transactions.

In the East, on Foundry Irons, the expected reduction of the price of the Thomas Iron Company has not yet been announced, the matter being still under advisement.

Large sales are reported in Pittsburgh of Bessemer Pig for forward delivery at practically the lowest prices reached. It is reported that the last decline is due to lower sales of Ore at Cleveland, thus reducing the cost of production of the Pig Iron. This is confirmed to some extent by the fact that Steel Billets are being offered for August and forward delivery at prices as low as any made in the past.

For spot Billets there has been quite a sharp advance in the Pittsburgh market, but the rise is due solely to temporary conditions.

There has been some heavy buying of Charcoal Iron at low prices, and local Chicago Coke Foundry Iron has been sold for delivery into next year at prices now ruling.

In Structural Material there is a decidedly firmer feeling in the East, particularly so far as Beams are concerned. Even a temporary relief of the pressure exerted by the large Western mills justifies a stronger feeling. Philadelphia reports that a 5500-ton lot of bridge work is likely to be placed in that market. In Bars, Angles and Plates no sensible strengthening is yet discernible. It is reported that an Eastern Pennsylvania mill has taken an order for 3500 tons of Steel Plates, Chicago delivery.

Copper is disappointing those who built great hopes upon the international agreement. It may be questioned whether the restriction is radical enough with the enormous current production. Pig Tin has suffered a sudden and decided drop of nearly 1¢ ℔ lb. The load which speculators were carrying was getting too heavy. Lead, too, is weaker, while Spelter remains unchanged. The movement in Tin Plate is uneven.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., June 21, 1892.

The extreme heat has somewhat interfered with business during the past week, so much so that it is difficult to say whether the market is better or worse. In finished material the feeling is stronger, due to the prospect of a decreased output during the next few weeks, and for the same reason Pig Iron is a little inclined to weakness. Taking everything into consideration, there is nothing in the situation likely to cause much change, unless it arises from something unforseen in connection with labor. Meanwhile consumers of Pig Iron are fighting shy of the market, while in regard to finished material the position is reversed, the seller being on the conservative side, but as regards general business, as we have already said, there is practically no change.

Pig Iron.—For reasons already mentioned the feeling is feverish, weak and unsettled. There is a very full supply of Southern Iron, and in some cases local brands are also freely offered, so that buyers think there is no need for haste in covering requirements for the fall months. A few choice brands command full figures, as the supply is small, and with a diminishing output there is not likely to be more than enough to go around, but of Iron of one kind or another there is a superabundance, and naturally a wide disparity in prices. During the coming month further weakness in prices of the grades that are most abundant seems to be quite within the bounds of probability, but it is hardly likely to be more than temporary, although under the present outlook things are too uncertain to warrant very confident predictions. Sales during the week have been at about the same figures as heretofore ruling, but at the moment buyers are less disposed to bid on large lots, and for some deliveries the following quotations could be shaded 25¢ @ 50¢ ℔ ton:

American Scotch, No. 1x	$17.00	@	$17.50
American Scotch, No. 2x	16 00	@	16.50
Standard Penna (Lake Ore), No. 1x	15 75	@	16.25
Standard Penna. (Lake Ore), No. 2x	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2 plain	13.50	@	14.00
Medium Quality, No. 1x	15.00	@	15.50
Medium Quality, No. 2x	14.00	@	14.50
Standard Virginia, No. 1x	14.75	@	15.25
Standard Virginia, No. 2x	14.00	@	14.50
Medium Va. and Southern, No. 1x	14.50	@	14.75
Medium Va. and Southern, No. 2x	14.00	@	14.25
Standard Penna. and Virginia Forge	13 50	@	14.00
Ordinary Forge	12.75	@	13 00
Hot-Blast Charcoal	18.50	@	21.00
Cold-Blast Charcoal	24.00	@	26.00

Muck Bars.—There is not much demand, but sellers are asking more money, say $24 @ $24.50, at mills, some quoting even higher figures, and being inclined to hold very firm until it is seen what turn things are likely to take in the West.

Steel Billets.—The market is irregular and difficult to define satisfactorily. There is quite a good deal of inquiry, but whether it is because Billets are wanted or to see what sellers are really inclined to do is hard to decide. Asking prices would be from $25 upward for Schuylkill Valley deliveries, but buyers are not taking hold of any but small lots, so that quotations for the time being are more or less a matter of opinion. Some makers refuse to quote at any price, others say $25 @ $25.50, while in most cases buyers secure an option or two and then decide to wait. Prices might easily advance to $26 or $26.50 in case of a protracted lock-out, or if there is only the usual midsummer stoppage they might just as easily slip back to the rates ruling two or three weeks ago. To meet contingencies of this kind, makers ask an advance, while consumers do very little beyond what we have already mentioned—viz., hold off.

Bessemer Pig.—There is some little business doing, and prices variously quoted at from $15.50 to $16 at furnace.

Low-Phosphorus Pig.—Business dull, and prices more or less nominal, varying from $17 to $17.25 at furnace, according to analysis.

Steel Rails.—The demand is improving, and mills securing quite a good deal of business in lots of from 500 to 5000 tons each. There is some talk of larger lots being taken, but up to this writing there is nothing of that kind definitely closed.

Bar Iron.—A fair average demand is reported, a little more than that in some instances, due to merchants and others securing an assortment of sizes preparatory to the midsummer stoppage of work at the mills. There are no specially large orders, however, and the immediate outlook is not materially different to that of the past three or four months. Prices fairly steady at 1.60¢ @ 1.65¢ at interior points and 1.70¢ @ 1.75¢ for city deliveries, and for very desirable orders some little shading from these figures.

Plates.—The demand for Plates is decidedly better, some of the mills being quite full of work, and others rapidly gathering it in. This is in a measure due to a better consumptive demand, but more to fears of a temporary scarcity in the West, and to the placing of several large orders from there with mills in this vicinity. The smaller class of buyers are also placing a good deal of business in the aggregate, so that for the time being the feeling is very much better. Prices are firmer, but desirable orders can still be placed at about the following prices, delivered:

	Iron	Steel.
Tank Plates	1.80 @ 1.90¢	1.75 @ 1.85¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2 60 @ 2 80¢
Special qualities		3.25 @ 3.75¢

Structural Material.—The demand is improving and mills are taking in a good deal of work, besides having inquiries which may result in business later on. Meanwhile prices are firmer, and on the chance of a protracted suspension of work during July there is less disposition to make concessions. An order for about 5500 tons of bridge work is under negotiation and will probably be taken in this vicinity. Prices are nominally about as follows: From 1.80¢ to 1.85¢, delivered, for Bridge Plates; 1.80¢ @ 1.90¢ for Angles, and 2.10¢ @ 2.20¢ for Beams, Channels or Tees, price depending on size of order.

Sheet Iron.—There is more business offering, and mills are kept quite busy in meeting the demand made upon them from day to day. Prices unchanged, and for small lots quoted about as follows:

Best Refined, Nos. 14 to 20	2.40¢ @ 2.60¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.10¢ @ 3.15¢
Best Refined, No. 27	3.30¢ @ 3 40¢
Best Refined, No. 28	3.40¢ @ 3 50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26	3½¢ @ 3¾¢
Best Soft Steel, Nos. 27 to 28	3¾¢ @ 4¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 70 %
Common, discount	@ 72½ %

Old Material.—Extremely dull, and quoted rates are only obtainable for such lots as consumers may happen to need. Under forced sales lower figures would have to be accepted. General quotations about as follows: $16 @ $16.50, delivered, for Heavy Steel Scrap, and $19 @ $19.50 for low phosphorus. General quotation:

about as follows: Iron Rails, $19.50, spot, to $20.50, delivered; Steel Rails, $15.50 @ $16.50, delivered; No. 1 Railroad Scrap, $17.50 @ $18, Philadelphia, or for deliveries at mills in the interior $17.50 @ $18.50, according to distance and quality; $12.50 @ $13 for No. 2 Light; $13 @ $14 for best Machinery Scrap; $13 @ $14 for Wrought Turnings; $9 @ $10 for Cast Borings, and nominally $22 @ $24 for Old Fish Plates, and $15 @ $16 for Old Car Wheels.

Wrought-Iron Pipe.—There is no improvement, except that lots are not being crowded on the market as during several weeks past. Such lots as buyers happen to need can be had at 5 @ 10 % less than nominal discounts, which are as follows:

Butt-Welded Black	57½ %
Butt-Welded Galvanized	47½ %
Lap-Welded Black	67½ %
Lap-Welded Galvanized	55 %
Boiler Tubes, 2½ inch and under	60 %
Boiler Tubes, 3 to 6 inch	65 %
Boiler Tubes, 7 inch and larger	55 %

Chamberlain, Turney & Baird, whose headquarters are in Columbus, Ohio, with branches in St. Louis and Chicago, have opened an office in Philadelphia with Mr. Baird as resident manager. Mr. Baird informs us that they will have the product of something like 30 furnaces at their disposal, from which they will be able to meet every possible requirement of either mill or foundry men. There is no scarcity of Iron around here, but the City of Brotherly Love is noted for its hospitality, and the trade will doubtless give the new firm and its representative as cordial a welcome as circumstances will permit.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 50 Dearborn street, CHICAGO, June 22, 1892.

The general condition of the Iron trade here is better in the matter of demand than it has been. Prices, however, show no tendency to advance, except in a few special cases. We have to note a continued buying movement in Pig Iron and less disposition to make concessions than was the case a week or two since. The situation in finished products is improving, partly because manufacturing establishments are securing more work and partly on account of the expected shut down in Western rolling mills.

Pig Iron.—The special feature of the past week was the heavy demand for Southern Coke Iron. Sales have been made aggregating 10,000 tons, some of which were for scattered deliveries, but the greater part for prompt shipments. This increased demand appears to have come from consumers who for some time have been running with very short stocks. Prices are so low that they apparently realize that they are running little risk in taking in greater quantities than usual. On this class of Iron concessions have been made of perhaps 25¢ ℔ ton on No. 2 Soft, which has hitherto been comparatively scarce and firmly held. The sellers now claim that no considerable quantity of this trade can be had at the rates just made. In view of the number of furnaces out of blast in the South, and the very firm position of leading makers, it would seem as if there was some ground for these statements. A fair business has taken place in local Coke Iron and a few contracts were made for future deliveries. Some of the local makers are taking contracts at present rates for shipments extending into next year, which would seem to indicate that they have little expectation of any considerable change in the condition of the market. One of the Bay View furnaces was blown in last week in order to meet the demand for grades of Pig Iron in which their stock is running low. A very good demand is experienced for Ohio Softeners, comparing well well with the sales of other Irons. Lake Superior Charcoal buyers are still testing the market and are endeavoring to work prices lower, but thus far have not been able to acomplish their purpose. A few of them, in fact, have so far recognized the strength of the makers that they placed contracts for lots of 1000 to 2000 tons. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$16.50 @ $16.75
Local Coke Foundry, No. 1	14.50 @ 15.00
Local Coke Foundry No. 2	14.00 @ 14.50
Local Coke Foundry No. 3	13.50 @ 14.00
Local Scotch	15.00 @ 16.00
Ohio Strong Softeners	16.50 @ 17.00
Southern Coke No. 1	15 00 @ 15.50
Southern Coke, No 2	13 75 @ 14 25
Southern Coke, No. 3	13.35 @ 13.75
Southern, No. 1 Soft	13.50 @ 14 00
Southern, No. 2, Soft	13 00 @ 13 25
Southern Gray Forge	12 75 @ 13.25
Southern Mottled	12 75 @ 13 25
Tennessee Charcoal, No. 1	17.50 @ 18.00
Alabama Car Wheel	21.00 @ 23.00
Coke Bessemer	@ 16 00
Hocking Valley, No. 1	17.00 @ 17 50
Jackson County Silvery	17.00 @ 17.50

Bar Iron.—The Mahoning Valley Mills are very generally quoting 1.50¢ at mill for Common Iron, and insist that under existing conditions that price will not be shaded even for large quantities. Small orders are, in fact, taken more willingly in view of the approaching vacation than large orders would be. The mills located in this market are taking advantage of the firmness of the valley mills and are securing business which perhaps under other circumstances would not fall into their hands. Sales are known to have been made on lots of 200 to 500 tons at less than 1.60¢, half extras, Chicago. Some of these sales were made to jobbers, and others to manufacturing consumers. Good contracts are in sight with car works, which will probably be closed this week. Soft Steel Bars are quoted at 1.70¢, Chicago, from mill, and this price is claimed to be bottom on good quality. Steel jobbers are quoting Bar Iron from store at 1.75¢ @ 1.80¢, and Bar Steel, 1.90¢ @ 2¢.

Structural Iron.—The bridge works in this vicinity are now quite well filled with orders, and the demand for material from that quarter is very much better than it has been for some time. The demand for Beams, however, has been less active the past week. A number of buildings are now getting in shape for bids, and considerable business is looked for in this line within the next two or three weeks. Prices show no change from those recently quoted, but on several sizes of Angles new competition has developed, and rates have been made below anything previously known here. We quote in a regular way as follows: Beams in round lots, 2¢ @ 2.05¢, and in small lots 2.15¢ @ 2.25¢; Angles, 1.90¢ @ 2.10¢: Sheared Plates, 2¢; Universal Plates, 1.90¢ and Tees, 2.35¢ @ 2 40¢. Small lots from store sell at a slight advance on the above prices, which are from mill only.

Rails and Track Supplies.—A fairly steady demand is noted for Steel Rails. Orders for prompt delivery are, of course, running only to small lots, but occasionally a sale is made of 1000 to 2000 tons. Manufacturers quote $31 @ $31.50 for standard section. Splice Bars have been in fair request, with prices ranging from 1.70¢ to 1.80¢ for either Iron or Steel, according to the buyer. Track Bolts with Hexagon Nuts are quoted at 2.65¢ @ 2.80¢, according to quantity; Spikes are held at 2.10¢ @ 2.15¢.

Merchant Steel.—A great deal of business has been done within the past few days, principally among the manufacturers of Agricultural Implements. These buyers are exercising some caution in making their season contracts, being influenced by the uncertainty of the crop of this year. It was expected that they would place much larger contracts than they did last year, but so far their purchases have been about the same, except that some little elasticity is given in the quantity named, so that if their requirements run large they will be able to get the additional material at the contract price. Competition among Steel makers has been rather lively for this business, but at the same time the prices made have hardly ranged so low as those made last year. In addition to season contracts, a good demand is noted for prompt shipments. The Tool Steel trade of the past week has been exceptionally good. Mill prices for Open-Hearth Machinery, Spring and Tire Steel range from 2¢ to 2.25¢, Chicago. Dealers quote from store Open-Hearth Spring Steel, 2.50¢; Tire, 2.25¢ @ 2.30¢; Crucible Spring, 3.50¢ @ 4¢; Crucible Machinery, 4 50¢ @ 5¢; Tool Steels, 6.50¢ @ 8¢ and upward, according to quality.

Plates, Tubes, &c.—A decidedly better condition of business is reported in Plates. Sales in quantities ranging from 100 to 800 tons have been more numerous than for months. The improvement in the demand has come so suddenly that dealers are chary about parting with their stock too rapidly, fearing that they will not be able to replace it from the mill during July and August. Orders from stock have for this reason been cut in two, which would not have been the case a fortnight back. The boiler makers' strike still continues, but nearly all of the shops in this vicinity have been able to supply themselves with part of their usual force, so that business is by no means suspended in this line. Prices from stock have been greatly unsettled by the improved demand noted, and it is now impossible to make a quotation which will hold for more than a day or two. Boiler Tubes are very firm, and the standard sizes are so scarce that a higher price is asked and easily obtained for them. Mill quotations are firmer, and Tank Steel is now bringing very close to 2¢, Chicago.

Sheets.—The Sheet Iron situation is remarkably good; most of the leading mills are all sold up. Sellers are in some cases advancing their prices 50¢ ℔ ton and find no difficulty in obtaining the advance from their regular customers. Iron Sheets can perhaps be had at 2.75¢ @ 2.80¢ at mill for No. 27, but the number of sales at this price is small and steadily decreasing. Jobbers continue their quotations at 3.20¢ for No. 27 and 3.10¢ for Nos. 25 and 26, with 10¢ @ 25¢ extra for Steel Sheets. A very fair trade is doing in Galvanized Iron, and the manufacturers are now a little firmer than they have been. The lowest price named for Juniata appears to be 70 and 7 % discount on mill lots, while jobbers quote 65 and 10 % @ 70 % from stock.

Old Rails and Wheels.—Old Iron Rails are extremely quiet, and quotations are nominal at $18 @ $18.25. Old Steel Rails are completely neglected, long lengths being held at $14 and short pieces at $12.50. Old Car Wheels are inactive, with holders asking $14.50, but consumers say they would not look at them at anything over $13.75.

Scrap.—The demand is moderate, but prices are lower, and heavy Cast can now be had at $11. Wrought Scrap is as dull as ever. Dealers quote the following selling prices per net ton, f.o.b. Chicago: No. 1 Forge, $14; No. 1 Mill, $9.50; Turnings, $7; Borings, $6; Mixed Steel, gross ton, $10; Coil and Leaf Steel, $13.50 @ $14.50.

Metals.—Lake Copper does not respond to the impulse of the speculative influence of the proposed combination. Carload lots are still quoted at 12½¢, and less than carload lots 12⅝¢. Carload lots of Casting Copper are quoted at 11.25¢ @ 11.50¢,

according to brand, with quite an active demand reported from some classes of consumers. In Pig Lead the week just closing has been dull and featureless. Values show a decline, yet brokers report that there has been no desire on the part of any refiner to force sales, and the trades consummated have been for consumption. The asking prices rule from 4¢ to 4.15¢ for Desilverized, and 3.95¢ for Missouri. For Spelter there is a good demand at this center, and the price has been advanced to 4.70¢ after sales of some 500 tons at or around 4.65¢. One order for 250 tons at 4 65¢ was refused by a prominent house on Saturday. Futures are held at 4.80¢.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, June 21, 1892.

About the only topic under discussion now by the trade is the labor question. Opinions differ very much as to whether there will be a strike or not. Some authorities who have made a very careful study of the situation express the opinion very forcibly that the Pittsburgh manufacturers will not sign the scale as presented by the Amalgamated Association, on account of the great difference demanded in wages to be paid in Pittsburgh mills and those in the East. The claim is made that it would be suicidal for Pittsburgh to pay for labor nearly double what is paid in the East and retain her trade. Amalgamated officials, on the other hand, state emphatically that they will not sign the scale presented by the Pittsburgh manufacturers on account of the great reductions demanded. If each side maintains its respective stand, as noted above, a strike is bound to occur. However, rumors are going that a compromise scale will be offered before long based on $5 ℔ ton for boiling and a reduction of about 10 % in the other departments. It is believed that such a scale would be signed by the Pittsburgh manufacturers in preference to having their mills closed down for a long period. The present week will doubtless witness some important developments in the labor question. For the week under review, there was very little change in the situation. Buyers are antic pating their wants in many lines, and as a result mills are being pushed to their utmost and will be for the balance of this month.

Pig Iron.—The past week was one of the best we have had for some time in the way of inquiries, and as a result a large amount of Iron changed hands. Buyers are showing a disposition to buy for future wants, and this leads to the belief that the trade is coming to the conclusion that prices are about as low as they will go. In support of this, buyers in a number of instances have endeavored to duplicate orders placed early last week, and in some cases were unsuccessful. While we quote $14 for standard Bessemer, it is but fair to state that a number of furnaces both here and in the valley are refusing to meet this price. In cases where the delivery is close at hand, the freight being from 10¢ to 30¢, Pittsburgh would take the order. When the freight is more than stated above, considerable trouble is found in placing the order. For Iron for delivery up to the close of the year, makers are insisting on a better price than $14 for Bessemer and in many cases are obtaining it. Bessemer for delivery during July, August and September is obtainable at prices ruling now. The great activity among the mills during this month has caused quite a spurt in the demand for Gray Forge, and a number of sales have recently been made for close delivery. During the past week prices did not show any change and we quote as follows:

Neutral Gray Forge	$12.60 @	$12.75, cash
White and Mottled	12.25 @	12.50, "
All-Ore Mill	12.75 @	13.00, "
No. 1 Foundry	14.35 @	14.60 "
No. 2 Foundry	13.35 @	13.60 "
Bessemer Iron	14.00 @	14.15, "
Cold-Blast Charcoal	24.00 @	24.25, "

We note sales as follows: 10,000 tons of Bessemer for delivery during August, September and October at private terms; 5000 tons of Bessemer for August, September and October delivery at $14.05, delivered at buyer's mill, the Iron netting the furnace $13.45; 3000 tons of Bessemer for delivery in June, July and August at $14, delivered; 1500 tons of Gray Forge at $12.60 and 500 tons at $12.65, both for close delivery.

Ferromanganese.—An improved demand for domestic is reported, and we are advised of numerous sales since our last report at prices ranging from $62 to $62.50. A sale of 50 tons of domestic was made here last week at $59, at seaboard.

Soft Steel Billets.—The coming shutdown of the Steel plants during the month of July is causing buyers to almost fall over each other in their efforts to get Steel for spot delivery. This unprecedented demand has shoved prices up very rapidly, and the prospect of $25 being paid for Billets before the month is out for immediate shipment is good. In the early part of last week Billets for June shipment could be had for $23. On yesterday 200 tons were sold at $24, the seller agreeing to deliver them at once. We are advised of sales of small lots running from 200 tons up to 1000 tons at prices ranging from $23 to $24. Of course the only cause of this jump in prices is the great scarcity of prompt Billets. This advance in prices is causing makers to ask more money for Billets for late delivery, and several makers are refusing to take orders at less than $22.50 for late delivery. On the other hand, buyers are not willing to pay this price, and, as a natural result, few if any orders for late delivery are being placed.

Structural Material.—The prospect of a conflict between the Amalgamated Association and the manufacturers is causing buyers to anticipate their wants largely, and as a result a large tonnage is moving. Makers state that prices are being maintained much better now than for some time past. Should a strike occur and the mills be idle for a considerable length of time, an advance in prices is possible, as it is now believed that stocks are very large. We quote as follows: Beams and Channels on a basis of 1.90¢ @ 1.95¢ for desirable orders and 2¢ @ 2.05¢ for small lots; Angles, 1.80¢ @ 1.85¢; Universal Mill Plates, Iron, 1.80¢ @ 1.90¢; Universal Mill Plates, Steel, 1.80¢ @ 1.90¢; Tees, 2.35¢; Refined Iron Bars, 1 65¢ @ 1.70¢: Steel Bars, 1 65¢ @ 1.70¢; Sheared Bridge Plates, 1.95¢ @ 2¢.

Steel Rails.—The meeting of the Steel Rail Association during the present week is being discussed considerably by the trade, and all sorts of predictions are being made as to what action will be taken. Some affect to believe that the price will be lowered, while others, equally as well informed, insist that the Rail trade is so well organized that no change will be made. We repeat quotations of last week, being $30, f.o.b. at mill, for standard sections.

Wire Rods.—There is little doing in Rods for immediate shipment. Buyers are well supplied and mills are generally sold up for some time to come. We quote Rods for shipment after July at $31.75 @ $32. A meeting of the Wire Rod manufacturers was held at the Hotel Duquesne, in this city, last week, but as near as we can learn no action of importance was taken.

Steel Plates.—As is the case with other lines, buyers are anticipating their wants largely, and a large output is the result. In addition to this, a very fair tonnage to supply immediate wants is moving. We quote as follows: Flange, 2¢ @ 2.10¢; Fire Box, 3.50¢ @ 3.75¢; Shell, 2¢ @ 2.10¢; Tank, 1.75¢ @ 1.85¢, f.o.b. Pittsburgh.

Muck Bar.—We are not advised of any transactions since our report of last week, and make nominal quotations of $24.50 delivered at buyers' mill.

Merchant Steel.—An improved demand for all kinds of Steel is noticeable, and this applies particularly to Agricultural Steel, orders for which have increased very materially since the recent good weather set in. As we remarked last week, however, makers fear that some orders will be held over for next year that would undoubtedly have been placed this year had it not been for the long siege of wet weather and the Western floods. We quote as follows: Tool Steel from 6¢ up, according to grade; Crucible Spring Steel, 3½¢ @ 4¢; Crucible Machinery Steel, 4½¢ @ 5½¢; Spring Tire and Machinery Steel from 2¢ to 2.40¢, according to quality.

Wire and Cut Nails.—Manufacturers report a very fair demand, but considerable complaining is being done at the low prices that are ruling. Several of our makers are not pushing the sale of their product, as they believe an improvement in prices will come before long. The demand for Wire Nails during July and August is always small and manufacturers do not look for much improvement in business before September next. Prices do not show any change, and we quote at $1.55 @ $1.60 in carloads and $1.65 in less quantities. There is no change to note in Cut Nails. Only a fair demand is going and makers do not expect any improvement for several months. We repeat quotations of last week as follows: $1.47½ @ $1.50 for carload lots, 30¢ averages in Wheeling and Mahoning Valley districts.

Wrought-Iron Pipe.—A meeting of the Wrought-Iron Pipe and Tube Manufacturers' Association was held in the Monongahela House in this city last week. The present depressed condition of the Pipe and Tube industry was thoroughly discussed, but no important business was transacted. Reports showed that some of the mills were fairly busy on orders booked some time ago, but new business is coming in very slowly. No change was made in discounts, which remain as follows: Butt, Black, 57½ %; Galvanized, 47½ %; Lap, Black, 67½ %; Galvanized, 55 %; Boiler Tubes, up to 2¼ inch, inclusive, 55 %; 3 inch and larger, 65 %; Casing, 55 %; Inserted Joint Casing, 50 %. These discounts continue to be shaded very liberally.

Skelp Iron.—The improvement in demand noted some time ago continues, and the recent advance in prices is being pretty generally maintained. We quote prices as follows: 1.55¢ @ 1.60¢ for Grooved and 1.70¢ @ 1.75¢ for Sheared, four months, or 2 % off for cash.

Barb Wire.—The great rush in demand for plain and Barb Wire is drawing to a close, although mills, as a rule, are pretty generally well employed. We repeat quotations of last week as follows; $2.25 @ $2.30 for Painted and $2.65 @ $2.70 for Galvanized, f.o.b. at factory, the lower price named being in carload lots.

Manufactured Iron.—In a little more than a week from now nearly all the mills making Bar Iron in Allegheny County will be closed down for periods ranging from two weeks to a month or six weeks. This has caused buyers to hurry in orders, and mills are being operated to their utmost capacity before the shut-down occurs. Of course, the all absorbing topic is the

settlement of the amalgamated scale, and there is a great diversity of opinion as to what will be the final outcome of the present labor question. In the scale presented last week by the Pittsburgh manufacturers to the Amalgamated Association the price of puddling was $4.50 ℔ ton, based on Bar Iron at 2¢ ℔ lb. To every fair-minded reader it will at once be evident that this scale is a very fair one and should be so considered by the Amalgamated Association. If we remember correctly, along in 1882, when the Iron business was very much depressed, though prices were not nearly so low as they are now, the Amalgamated Association formulated a scale at which puddling was put at $5, and reductions were made in other departments. If the condition of trade in 1882 demanded a reduction in price of labor, the Iron business, as we find it at the present time, unquestionably demands a reduction and a larger one than that made in 1882. In this connection, however, it is the belief among many in the trade that if the Amalgamated Association will seriously consider this mater and agree to make a reduction of about 10 % in the Amalgamated scale for 1892-93 the manufacturers would probably sign it in preference to having their mills closed down At the best, a strike is to be avoided at all times; but in periods of depression like the present one it is folly to expect manufacturers to go on paying the same prices for labor as they would be required to do by the Amalgamated Association if Bar Iron were selling at $5 ℔ ton more than it is now. At the conference held last week between the Pittsburgh manufacturers and the Amalgamated Association both scales were gone over very carefully and discussed most thoroughly. On Friday a number of Pittsburgh manufacturers appeared in the convention hall of the Amalgamated Association and stated their case to the delegates. No intimation was given as to what effect the addresses of the manufacturers would have on the members, but it is not impossible that a revision of the Amalgamated scale will be ordered. A further conference will, no doubt, be held during the present week or early next week. In the face of the coming shut down, it is not expected that anything will be done in the way of signing scales until next month, even should a scale be sent in by the Amalgamated Association that would be acceptable to the manufacturers during this week. The Bar Iron makers of the Mahoning and Shenango valleys and the Cleveland district will meet the Conference Committee of the Amalgamated Association in Youngstown this week, but what action will be taken at this meeting it is impossible to state. Should Pittsburgh manufacturers sign a scale based on $5 ℔ ton for boiling, the Mahoning and Shenango valley makers would, no doubt, follow the same course. Important developments regarding the labor situation will be forthcoming in a week or ten days. Since our report of last week prices have not shown any change, and we quote as follows: No. 1 Bars of the very best grade at 1.60¢ @ 1.65¢. Bars in which some Old Rails are used can be obtained from 1.47½¢ to 1.55¢; Steel Sheared Plates we quote at 1.85¢ @ 1.90¢, and Iron Sheared Plates at 1.75¢ @ 1.85¢; No. 24 Sheet at 2.40¢ @ 2.50¢; all 60 days, 2 % off for cash.

Scrap Iron and Steel.—The coming shut-down of the Iron mills has had the effect of still further depressing the market for both Scrap Iron and Steel, and as a result there is practically no business doing at all. Occasionally a small lot of Scrap changes hands, but in all cases prices obtained are very much to the advantage of the buyer. In the absence of any business doing on which to base quotations we repeat our prices given last week: No. 1 Railroad Wrought Scrap, $14.50 @ $15 ℔ net ton; Cast Scrap, $11 @ $11.50 ℔ gross ton; Billet and Bloom Ends, $15.50 @ $16; Cast-Iron Borings, $7 @ $7.50 ℔ gross ton; Mixed Country Steel, $13 ℔ gross ton; Railroad Coil Springs, $17 @ $17.50 ℔ gross ton; Leaf Springs, $19.50 @ $20; Old Steel Axles, $20 @ $20.50; Machinery Cast Scrap, $11.50 @ $12.

Old Rails.—For the first time in some weeks we are advised of two sales of Old Iron Rails for delivery in the Mahoning Valley. The price obtained was $20 ℔ ton, delivered at buyer's mill. In Old Steel Rails there has been nothing done since our report last week, and we make nominal quotations as follows: Short length Old Steel Rails which do not require sorting, $15 50 @ $15.75; miscellaneous lengths we quote at $15 @ $15.25, and long lengths at $15.75 @ $16.

Jos. Dreifus has located in room 702 Penn Building, Pittsburgh, Pa., and will carry on a general business as broker in Iron and Steel, making a specialty of dealing in Scrap material of all kinds.

Cleveland.

CLEVELAND, OHIO, June 20, 1892.

Iron Ore.—The sales of non-Bessemer Ore continue and fair amounts have been let go during the past week. Prices have been shaded somewhat and buyers have had all the best of it. These sales have infused new life into the whole Ore market and a good month's business is anticipated for June. The following may not be present quotations, but they represent about the prices paid for Ore during the week just closed:

No. 1 Specular and Magnetic Ores, Bessemer quality	$5.00 @ $6.00
No. 1 Specular and Magnetic Ores, Non-Bessemer quality	4.00 @ 4.75
Red Hematite Ores, Bessemer quality	4.25 @ 4.50
Red Hematite Ores, Non-Bessemer quality	3.40 @ 3.80

About 92,000 tons of new Ore were unloaded on the local docks during the past week, as compared with 37,000 tons for the same week in 1891. The receipts at all Lake Erie ports aggregated nearly 225,000 tons, against 100,000 tons received from the Lake Superior district for the same week last year. The shipments to the furnaces are also much heavier than in 1891. About 35,000 tons were forwarded to the valleys last week, while during the corresponding week in 1891 only half that amount was sent away. By persistent effort the rate for bringing down Ore from Escanaba has been forced up to 75¢ ℔ ton, while $1.05 ℔ ton is paid from Ashland's two harbors. The total amount of new Ore sold up to date is close to 4,250,000 tons. Dealers look for some big sales during the next 30 days.

Pig Iron.—While there is, perhaps, a little more comfortable feeling in view of the fact that stocks on hand are shown to have slightly decreased, there is not even a slight increase in the volume of sales of Pig Iron, as is noted in the market. The effect of the closing down of furnaces is beginning to be felt to a limited extent and the outlook is a bit more pleasing. A number of furnaces have been added during the past week to the list of closed down furnaces in Cleveland and the Mahoning Valley—the latter in some measure on account of the high rail freight rates. Curtailment of production is the only route for the improvement of the Pig Iron market; but, after all, it seems to be the only feasible route to reach the destination desired. The sales of the past week have been exceedingly few and far between. Nominal quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	$17.50 @ $18 05
Nos. 1, 2 and 3 Bessemer, per ton.	15.00 @ 15 20
No. 1 Strong Foundry, per ton..	15.00 @ 15 50
No. 2 Strong Foundry, per ton..	14.00 @ 14 50
No. 1 American Scotch, per ton.	..... @ 15.60
No. 2 American Scotch per ton.	.....@ 14.60
No. 1 Soft Silvery, per ton.....	15.50 @ 16.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	13.50 @ 14.00
Mahoning and Shenango Valley Red Short Mills, per ton.....	14.00 @ 14.50

Scrap.—Dullness continues and only an occasional sale is reported. Dealers quote No. 1 Railroad Wrought at $16.25 @ $16.50; Cast Scrap at $12 @ $12 25; Wrought Turnings at $11 @ $11.50, and Cast Borings at $8 @ $8.25.

Old Rails.—The market is dull. Plenty of Old Americans are offered at $19 @ $19.50, but buyers are taking them in small lots.

Barb Wire.—The demand continues excellent and prices are very firm.

Nails.—Wire Nails have advanced to $1 70 ℔ keg, in stock, with Cut Nails at $1.65. The market is firm in every way.

St. Louis.

Office of *The Iron Age*,
Bank of Commerce Building,
ST. LOUIS, June 20, 1892

Pig Iron.—There is scarcely any change to note in the conditions governing this department. Sales have been limited to moderate quantities to supply immediate wants. Prices do not change either way, and are on the whole fairly satisfactory. Under the steady demand which has prevailed for the past two or three weeks the market has maintained a firm front, and while no large movement is anticipated, a fairly steady market at slightly advanced prices is confidently looked for. Furnaces, however, continue to accumulate large stocks, and there still remains plenty of Iron for sale. This fact, coupled with the dull season, may tend to prevent the anticipated improvement outlined above. As compared with last week the market is undoubtedly in the same condition, and is likely to remain so for the next 60 to 90 days. For ordinary quantities we quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$14 00 @ $14 25
Southern Coke, No. 2 Foundry,	13.25 @ 13.75
Southern Coke, No. 3 Foundry,	12 50 @ 13.00
Gray Forge	12.25 @ 12.50
Southern Charcoal, No. 1 Foundry	16 25 @ 16.75
Southern Charcoal, No. 2 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 1 Foundry	14.50 @ 15.00
Missouri Charcoal, No. 2 Foundry	14 00 @ 14.25
Ohio Softeners	17.00 @ 17.25

Bar Iron.—Mills continue to keep fairly well employed, notwithstanding that this is the dull season. The railroads continue to buy liberally, and jobbers report an active demand from out of town customers. Mills quote 1.60¢ @ 1.62½¢. half rates, f.o.b. cars East St. Louis. Jobbers quote 1.67½¢ @ 1.72½¢ for lots from store.

Barb Wire.—The demand does not show much signs of falling off. Mills report an unusually heavy trade for this season and prices remain firm as last quoted, as follows: Painted, $2.30; Galvanized, $2.75; less than car lots 10¢ ℔ cwt. additional.

Wire Nails.—The Nail trade continues very dull, and the market is somewhat demoralized. Car lots are quoted at $1.65, and we are advised that this price has been shaded in several instances. Jobbers say the demand is exceedingly dull, and in some cases are compelled to fill orders at nearly the price mentioned above for car lots. It now seems impossible that prices can go any lower, and purchases

made to-day will more than likely prove paying investments. It must be borne in mind, however, that stocks are large, and if thrown on the market indiscriminately might result disastrously so far as prices are concerned.

Pig Lead.—The demand for Pig Lead is somewhat stronger than it was one week since, but as yet not sufficiently heavy to influence prices, which remain as last quoted. Sales are reported at 3.95¢, with bids of 3.92½¢.

Spelter.—The market has undergone no change whatever. The demand is light, but, notwithstanding this fact, prices remain unchanged. The outlook for Spelter seems reasonably bright, and once the demand improves there is likely to be a corresponding improvement in prices. At the moment 4.60¢ @ 4.65¢ is the market.

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., under date of June 20, 1892, write: There has been no decrease in the volume of business, nor has there been any increase in prices obtained. Buyers of Lake Superior Charcoal are coming into the market freely and are closing for their season's supply at figures as low as have been made at any previous time. The best brands command a little better figure than some not so well known, but low prices are ruling for even the best Irons. The prospects for a larger volume are flattering, and some buyers, as well as sellers, expect at advance at no very distant day. The Coke Iron market remains unchanged. An occasional order is received for a fairly large amount, but the consumers seem satisfied that there is not much to be made by anticipating their wants, and buy only as they need the Iron. Very little demand is made for Ohio Silveries on account of the high prices asked for best brands. With an active market for Lake Superior Charcoal at unchanged figures we quote as follows:

Lake Superior Charcoal, all numbers	$16.50 @ $17.00
Lake Superior Coke, Bessemer	16.00 @ 17.00
Lake Superior Coke Foundry, all ore	16.50 @ 17.00
Ohio Blackband (40 per cent.)	17.00 @ 17.50
Southern No. 1	15.00 @ 15.50
Southern Gray Forge	13.25 @ 13.75
Jackson County (Ohio) Silvery	17.75 @ 18.25

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, June 22, 1892.

There has been an increased volume of business in Pig Iron during the week, because sellers have concluded to meet the views of buyers and have made concessions of about 25¢ per ton on No. 2 Foundry, No. 3 Foundry and Gray Forge. There have been sales of No. 2 Foundry at $9.75, f.o.b. Birmingham, for the remainder of this year, and some of them for delivery up to March 1. There have also been sales as low as $9.60, spot cash, for immediate shipment. There are some leading furnaces which refuse to accept this price, but it is evidently a buyers' market and all the Iron required is obtained. The demand is mainly from agricultural works, who expect to buy largely from now until August 1, and claim that they will get deliveries extended until August of next year at the same price. There continues to be a good current consumptive demand for small lots of various kinds of Iron running from one carload up to 500 tons, for which pretty full previous prices are obtained. The sales for the week aggregate upward of 15,000 tons at the low prices named, and the smaller lots probably being the aggregate tonnage for the week to an excess of 25,000 tons. Some sellers say that business is dull, but they live in hope of better things. Others say they did so until they nearly starved and have now concluded to do business at buyers' prices. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$13.75 @ $14.00
Southern Coke, No. 2	12.50 @ 13.00
Southern Coke, No. 3	12.00 @ 12.50
Ohio Soft Stone Coal, No. 1	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Mahoning and Shenango Valley	16.60 @ 17.25
Hanging Rock Charcoal, No. 1	19.75 @ 20.00
Hanging Rock Charcoal, No. 2	19.00 @ 19.50
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00

Forge.

Gray Forge	11.50 @ 12.00
Mottled Neutral Coke	11.25 @ 11.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	18.75 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18.00

Louisville.

LOUISVILLE, KY., June 18, 1892.

In contracts recently let competition was very sharp and prices irregular, offers on Gray Forge ranging from $9 to $8.50 for deliveries throughout the year. Other grades were also affected, and open Silver Gray sold on the basis of $9.75, Birmingham. The low prices at which Virginia Irons are being offered, followed by cutting in Northern Irons in the East, have made competition in the West from the South especially keen. The feeling, however, is increasing on the part of buyers that now is an opportune time to purchase, and as this becomes more general the quantities of Iron contracted for will result of itself in better prices. The present low prices of Southern Irons do not arise solely from competition from other districts, but largely from unreasonable competition arising among themselves, and, as nothing is to be gained by further demoralization in making prices as low as $8.50 @ $8.75 for Gray Forge for Western consumption, it is hoped that some agreement can be arrived at by which concerted action may prevent the market from being further demoralized. We quote for cash, cars, Louisville:

Southern Coke, No. 1 Foundry	$13.75 @ $14.25
Southern Coke, No. 2 Foundry	12.75 @ 13.25
Southern Coke, No. 3 Foundry	12.00 @ 12.50
Southern Coke, Gray Forge	11.50 @ 12.00
Southern Charcoal, No. 1 Foundry	15.75 @ 16.75
Southern Car Wheel, standard brands	18.00 @ 19.00

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, June 22, 1892.

Pig Iron.—B. G. Clarke, president of the Thomas Iron Company, has decided to await developments until after July 1 before deciding upon an announcement of lower prices, contemplated recently. It seems probable that if a reduction is decided upon it will be $1 ℔ ton. The raid made by some of the Southern producers in the Western markets has pushed prices to the lowest point, but it should be stated that some of the leading furnace companies have not participated in it. Whether they will change their policy of piling up Iron and in their turn press Iron on the market remains to be seen. We quote Northern brands at $15.50 @ $16 for No. 1; $14.75 @ $15 for No. 2; $13.50 @ $14 for Gray Forge, tidewater. Southern Iron, same delivery, $14.75 @ $15.50 for No. 1; $13.75 @ $14.50 for No. 2 and No. 1 Soft; $13.25 @ $13.50 for No. 2 Soft; $12.75 @ $13 for Gray Forge.

Spiegeleisen and Ferromanganese.—Spiegeleisen continues lifeless. In Ferromanganese the Cleveland order seems to have been placed. The inquiry was for 500 tons. We quote $59 @ $59.50 for 80 ¢ Ferromanganese.

Billets and Rods.—No business is doing in this market.

Steel Rails.—The market continues exceedingly quiet, although there are rumors that the Chicago mill has taken a very large order lately. The largest sale made by Eastern mills during the week is a lot of 2000 tons to the Pennsylvania Railroad. The meeting of the Rail makers was held at Sparrows Point, Tuesday, the representatives of the mills having accepted an invitation from the Maryland Steel Company to visit the plant. The present arrangements were affirmed. Prices remain $30 at mill.

Manufactured Iron and Steel.—In Steel Beams a firmer feeling prevails, and slightly higher prices are being asked by Eastern mills. Angles and Plates are being sold at close prices, and even small business in Bars has been taken at very low figures lately. Nominal prices, subject to concessions on good specifications, are as follows: Beams, 2.25¢ @ 2.65¢ for small lots and 2.15¢ @ 2.50¢ for round lots, according to sizes; Angles, 1.85¢ @ 2¢; Sheared Plates, 1.8¢ @ 2.25¢; Tees, 2.30¢ @ 2.75¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.8¢ @ 1.9¢ for Tank; 2¢ @ 2.25¢ for Shell; 2.30¢ @ 2.65¢ for Flange; 2.5¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Refined Bars are 1.7¢ @ 1.9¢, on dock, Common, 1.6¢ @ 1.65¢. Scrap Axles are quotable at 2¢ @ 2.10¢, delivered. Steel Axles, 2¢ @ 2.1¢, and Links and Pins, 2.05¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered.

Track Material.—The market is very dull with quotations as follows: Spikes, 1.90¢ @ 2¢, delivered; Fish Plates, 1.55¢ @ 1.60¢, at mill; Track Bolts, square nuts, 2.50¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Old Material.—No transactions of consequence have taken place in this market.

Stock Warrants.—The American Pig Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard May 31, 1892	62,500
Put in yard for 20 days ending June 20, 1892	5,400
Total	67,900
Withdrawn 20 days ending June 20, 1892	200
Net stock in yard June 20, 1892	67,700

Under the style of Cudlipp & Hollister, J. R. Cudlipp, formerly with Warren, Wood & Co. and H. H. Adams, and E. S. Hollister have formed a co-partnership for the conduction of a commission business in pig iron, iron ore, &c., with offices at 44 Pine street, New York.

Metal Market.

Copper.—Lake Superior Ingot is at least ¼¢ cheaper than it was a week ago. Certain prominent producers claim that deliveries on old contracts at 12¢ are absorbing nearly their entire current output, and that they are not in the market for new business at a lower price. Others who may not be as favorably situated are scouting for new orders, however, and the efforts and inducements to enliven interest among consumers have been so slimly rewarded that the development of weakness beneath the surface makes gradual progress. Not a few orders for single carload lots have, in fact, been booked at 11.80¢ @ 11.85¢, and, where larger quantities were involved, 11¾¢ was accepted, so that any higher price than

the one last quoted stands as an exceptionally high rate. The lower grades are correspondingly cheaper. Thus 11¼¢ @ 11½¢ now stand as full rates for ordinary jobbing quantities of common casting Copper, while 11¢ has been accepted where orders involved larger quantities. English as well as American prices have ruled somewhat lower, and, whatever may be in store for the future, the market at present is undoubtedly flat and doubtless disappointing to those in the trade who have calculated upon the international agreement as to production in Europe and shipments from this country counteracting the natural influence of unrestricted supply and merely routine demand. It was reported at the close that at least 3,000,000 lb, probably a larger quantity, of Lake controlled by bankers have been closed out quietly at 11¼¢ during the past few days.

Pig Tin.—Prices for Pig Tin have taken a sudden and decided downward turn, and it is an open question at the moment whether the "bulls" and their followers have got beyond their depth or whether the arch manipulators have resorted to strategy for the purpose of freezing out those traders who have been buyers on the advance. Whatever the facts in this connection may be, it is a matter of record that, against 22.15¢ @ 22.20¢ paid in less than a week's time for current month and July delivery, 21¼¢ has been accepted the past few days in this market, and that London prices have dropped over £3 during the interval. Some accounts are to the effect that the load carried here (upward of 3500 tons) has become extremely burdensome and that London manipulations have been ineffectual in preventing a natural reaction. Others are to the effect that the play between London and New York, in which sentiment was worked up to a high pitch on both sides of the Atlantic, is greatly disturbed and that considerable liquidation is in store for the immediate future, the outcome of which is a matter of conjecture. Whatever the final outcome may be, it is patent that purchases for trade and consumptive account have been brought almost to a standstill, and that speculative interest is reduced for the time being, to the evening up of outstanding deals, by the events of the past few days. Transactions in future deliveries on the Exchange during the past two days involved about 350 tons, at down to as low as 21¼¢ for July and 21½¢ for June delivery, or over 1¢ decline from the highest point touched when the "bull" fever was at its hight. At the close there was a slight roaction, due to clique buying and a turn for the better in London, advised by cable.

Pig Lead.—The offering of Lead for future delivery by producers who have been out of the market for some time past has, in connection with the apathy of consumers, had a depressing effect upon the market, and stagnation accompanies dullness at this writing. Some few trades involving fair sized lots went through at 4.10¢, and in exceptional instances 4.05¢ was reached on transactions to fix the price. At this writing sellers at 4.10¢ for current or following month delivery appear to be numerous, while bids above 4¢ for lots of 100 tons or more are the exception, all of which would indicate a weak market at the close.

Spelter.—No decided change has taken place in the market for this metal. Orders calling for Western brands for prompt shipment are still difficult to fill at less than 4.85¢ @ 4.90¢, delivered in the East. On the other hand, buyers pass offers at 4.80¢ for July and August shipment and manifest unconcern in view of the fact that orders for European account have ceased to be an important factor, while smelters appear more anxious for contracts for those months, now that early resumption of work at some lately inundated mines is probable. Best bids for late deliveries are not above 4¼¢ and above 4 65¢ is the exception for ordinary Western brands.

Antimony.—The demand has continued slow and prices still lean more or less in buyers' favor. We quote at 10¾¢ @ 11¢ for Hallett's, 11¼¢ @ 12¢ for LX, 12¢ for Crown and 14½¢ @ 14½¢ for Cookson's, in wholesale quantities.

Tin Plate.—Packers of vegetables are taking a good many cans since orders for their goods are on the increase, but the canning of fruits this side of the Pacific Coast promises to be light, owing to poor crops, and for oil canning and miscellaneous uses the demand is merely fair. The movement in Tin Plate is correspondingly uneven, and neither spot parcels nor future deliveries are selling otherwise than in a routine way. Prices are no lower in any instance, but the general market presents a rather flat appearance. We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J B. grade, do., $5.37½; Bessemer do., $5.30; light weights, 100 lb, 10¢ less; 95 lb, 20¢ less; 90 lb, 30¢ less than full weight; Siemens Steel, $5.37½. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75 @ $5.80; IX basis, $6.80. IC Charcoals—Melyn grade, ½ X, $6 40; for each additional X add $1.50; Allaway grade, $5.75; Grange grade, $5 85; for each additional X add $1.20. Charcoal Ternes—Worcester, 14 x 20, $5 75; do., 20 x 28, $11.30; M. F., 14 x 20, $7.37½; do., 20 x 28, $15; Dean, 14 x 20, $5 40; do., 20 x 28, $10.80; D. R. D. grade, 14 x 20, $5.35; do., 20 x 28, $10.40; Mansel, 14 x 20, $5.30; do., 20 x 28, $10 45; Alyn, 14 x 20, $5.45; do., 20 x 28, $10 65; Dyffryn, 14 x 20, $5.65; do., 20 x 28, $11. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, $10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, $9.80.

Financial.

Improved crop prospects and increasing exports of gold at a time when the stock of gold in the United States Treasury is very low are the most conspicuous features of the week. Were it not for the condition of the Treasury and the continued agitation of the silver coinage question, the movement of gold would possess no significance, on account of the abundance of money both at home and abroad, especially as the remittances just now are understood to be chiefly for coupons due July 1. But many are inclined to regard the sale of American securities on foreign account as evidence of distrust respecting the stability of our currency system. Aside from the explanation above given, it is known that German bankers offer special inducements for the shipment of gold in order to supply the needs of Austro-Hungary in carrying out a scheme of currency reform. English financiers predict a reversal of the gold movement when the new crops in the United States begin to go forward. Referring to the exceptional ease in the money market in all directions, the London *Economist* says: "At all the chief monetary centers it is the same, and this gives rise to the reflection that there is something almost ludicrous in convening a conference to consider how silver may be utilized so as to make up for an alleged scarcity of gold." By far the most important influence felt in trade circles at the present time is the rapid improvement in the growing crops and the excellent harvest already in progress in the most advanced sections. Predictions of a yield only something like 50,000,000 bushels below the unprecedented gathering of last year are freely made, and the consequence is seen in steadily declining prices The drop in wheat is equal to about 6¢ a bushel since the first hopeful augury of the Agricultural Department of a fortnight ago. At the close there is a rally on reports of poor crop weather in Russia. Germany and France. The Paris *Journal Des Debats* of June 17 declares that the adverse harvest reports are exaggerated. It says that the yield of wheat will be vastly superior to the crop of 1891, but that barley and oats have suffered severely. The condition of English wheat on June 1 this year was 88.8, against 92 same date last year. The area was 85.1, against 91.6 last year. The falling off in both condition and area is attributed to the autumn weather being unfavorable for planting. A dispatch from Wichita, Kan., June 18, says: "The wheat harvest is in full blast in Southern Kansas. The quality of the grain is excellent. In the extreme Western counties the crop is reported as magnificent. The reports from nearly all points indicate a larger yield than last year's." A Missouri telegram reports that half the wheat in the Southern part of the State will be cut this week.

The stock market has shown much strength, though some anxiety has been felt as to the prospects of the Anti Option bill and the shipments of gold, which had a depressing influence. On Monday a decline in Richmond Terminal securities was also a prominent feature of the market. A report was current that Drexel, Morgan & Co. had declined to undertake the reorganization. Stocks of the Duluth, South Shore & Atlantic Railroad have been active for several days, but as a whole trading has been slow outside of the grangers, St. Paul generally taking the lead.

United States bonds are quoted as follows:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	116⅝
U. S. 4s, 1907, coupon	117⅜
U. S. currency 6s	106

The posted rates for bankers' sterling are $4.88½ @ $4 89½. The market is dull and steady. Eastbound tonnage from Chicago for the past week, 56.122 tons, against 53,736 the previous week and 44,140 the same week last year.

The weekly statement of the Associated Banks was favorable, but the gold exports of the previous week, amounting to $7,282,000, were not fully reflected. Loans were increased nearly $2,000,000. The result of all the changes was a loss in surplus reserve of $762,025, but the banks still hold in excess of legal requirements $22,783,825, against $5,687,400 in the corresponding week a year ago, $6,144,925 in the preceding year and $9,220,500 in 1889.

Money tends to better rates. The market for commercial paper is quiet. Prime indorsed bills receivable are quoted at 3 @ 3½ %; first-class single name, four months, at 3½ @ 4 %. The Canadian Government issued a new 3 % loan in London on Monday, which was subscribed for three times over and was quoted at 101½ at the close, showing the ease and abundance of money in that city.

Exports of merchandise from New York for the week were $8,306,000, and since January 1 $200,044,000, against $168,099,000 for the same time last year. The imports for the week were $9,202,000, and since January 1 $4,000,000 larger than for the same time last year.

All the governments of Europe, with the single exception of Russia, have either formally or informally accepted the invitation issued by the President to participate with the United States in a monetary con-

ference looking to a more extensive use of silver money.

A Washington special says: "Secretary Foster has addressed a communication to Congress in which he recommends that the act of July, 1890, authorizing the issue of Treasury notes in the purchase of silver bullion, be amended so that such notes may be received as a special deposit by the Treasury Department and certificates of deposit be issued thereon, thus placing Treasury notes on the exact footing with the old United States notes in that certificates of deposits may be issued for both alike."

The President on Monday sent to the Senate, in answer to a resolution of February 24 last, calling for information relative to the reciprocity negotiations with Canada, a State paper, in which he says that the condition under which the Canadian Commissioners were obliged to treat "places an insuperable barrier in the way of the attainment of that large and beneficial intercourse and reciprocal trade which might otherwise be developed between the United States and the Dominion." The President refers to the failure of the Dominion Government to rescind the discriminating canal tolls, in violation of the treaty of 1871, and suggests that Congress "should take such steps as may be necessary to secure the just rights of our citizens."

The Senate Judiciary Committee, to which the Anti-Option bill was referred, are fully expected to report this coming week.

Coal Market.

Next Thursday the Anthracite combine meet to fix prices and an advance of about 25¢ ℔ ton is confidently predicted, although the market is dull, with no lack of Coal, and there is nothing in external circumstances that would seem to warrant the step contemplated. Outside wholesale dealers, commonly meaning by this the Pennsylvania Railroad Company and those acting in sympathy, are selling Free-Burning Coal 15¢ @ 25¢ below the combine schedule. Lehigh Coal is scarce. Some in the combine talk of 35¢ advance on Stove. On Steam sizes there will probably be little or no advance.

The production of Anthracite Coal for the week was 782,234 tons; production so far this year, 16,891,909 tons; increase over last year, 1,067,655 tons. Reading tonnage for week, 467,000 tons. Pennsylvania Coal tonnage, 374,201 tons; Coke, 99,229. Increased production of Soft Coal and Coke this year over last to date, 1,016,371 tons. The production of the Clearfield region was for week 57,660 tons; Beech Creek, 53,842, and the Virginia roads, 112,355 tons. Mines are running two-thirds time in the Anthracite region, but full time in the Bituminous.

The Albright Coal Company, representing the Pennsylvania Railroad Company, and who purchased the lands and rights of the Silverton Coal Company, near Llewellyn, in the western part of Schuylkill County, have placed a large force of men at work opening up the old workings abandoned some time ago, with a view to making extensive developments.

There has been some delay in the execution of the traffic contract between the Reading and the New England roads owing to complications over the Dutchess County extension, which connects the New England road with the Poughkeepsie Bridge system. It is expected that the complications will soon be removed. Considerable traffic will be sent over the Poughkeepsie Bridge as soon as it goes into effect. The Reading intends to ship Hard Coal to Central New England points over the Poughkeepsie Bridge system.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, June 22, 1892.

In prices of Pig-Iron warrants the movement has been narrow, with Hematites receding about 6d, but neither Scotch nor Cleveland varying more than 3/. More business has been done in Scotch warrants, however, but operations in Cleveland were limited, chiefly covering previous "bear" sales prompted by further reduction in stocks and disinclination of makers to yield, despite the cessation of the Durham strike. The consumption of Cleveland Iron has improved, but in other lines there is no change. There is some pressure for early deliveries of the former. At present there are 74 Scotch furnaces in blast. Cleveland furnaces are rapidly relighting. The last returns show a further reduction in stocks in Connal's stores. The totals were 435,000 tons Scotch and 42,000 tons Cleveland. Latest transactions were at 41/3 for Scotch, 41/ for Cleveland and 50/ for Hematite.

The Pig-Tin market has experienced a sharp reaction. Prompt deliveries, after reaching £103. 15/, gradually weakened to £100, with futures at £1 discount, under pressure to sell. The latter movement was prompted by reports of "bear" pressure to sell in New York. Local demand has been limited, however, and the feeling here is one of uncertainty and indecision. Demand for consumption is momentarily limited.

Copper has been quiet and the market is easy at about £50. 10/ decline on Merchant Bars. The statistical exhibit showing 1616 tons increase in European spot stocks and 1733 tons increase in visible supply prompted speculative selling of both spot and future deliveries. Outside operations have been limited and the consumptive demand is quiet. Sales of furnace materials recently include 1000 tons Montana Matte at 9/4½, 700 tons Montana Argentiferous and 100 tons Anaconda on private terms.

Tin Plate has been quiet but firm, More doing in Ternes at 22/6 for doubles, and in Bessemers at 12/6 for American account, but business otherwise on a moderate scale. In Black Plate for America, fair sales reported at £8. 10/.

Scotch Pig Iron.—Dealings moderate, but prices without change and the offerings reserved:

No. 1 Coltness,	f.o.b.	Glasgow	53/6
No. 1 Summerlee,	"	"	52/
No. 1 Gartsherrie,	"	"	50/6
No. 1 Langloan,	"	"	50/6
No. 1 Carnbroe,	"	"	44/
No. 1 Shotts	"	at Leith	51/
No. 1 Glengarnock,	"	Ardrossan	50/
No. 1 Dalmellington,	"	"	47/6
No. 1 Eglinton,	"	"	46/6

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Cleveland Pig.—There has been a fair demand, and moderate stocks serve to hold prices firm at 41/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Business on a moderate scale, and the market barely steady at 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Little doing and sellers' prices unchanged. English 20 % quoted at 77/6, f.o.b. shipping port.

Steel Rails.—No change; business moderate and at old prices. Heavy sections quoted at £4. 2/6, f.o.b. shipping port.

Steel Billets.—The market remains very quiet and unchanged. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

Steel Blooms.—A small business passing at about former prices. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Steel Slabs.—Market remains very quiet and without change. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

Old Iron Rails.—Demand continues light. Holders ask former prices. Tees quoted at £2. 17/6 and Double Heads at £3, f.o.b.

Scrap Iron.—Business slow and prices are without change. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Market remains dull and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Manufactured Iron.—No improvement in the demand in any department, and prices without change. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	10	0	@		..	
" Common "	6	5	0	@	6	7	6
Staff. Bl'k Sheet, singles	7	5	0	@		.....	
Welsh Bars (f.o.b. Wales)	5	10	0	@		.....	

Tin Plate.—Business moderate, but makers quite firm on prices. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	14/6 @ 15/
IC Bessemer Steel, Coke finish	12/6 @ 12/9
IC Siemens " " "	12/9 @ 13/
IC Coke, B. V. grade 14 x 20	12/6 @ ....
Charcoal Terne, Dean grade	12/ @ 12/3

Pig Tin.—Market closes firmer at £99 12/ @ £99. 15/ for spot, and £98. 5/ @ £98. 10/ for three months' futures.

Copper.—Rather more business at the close and prices steadier. Merchant Bars quoted at £45. 2/6 @ £45. 5/, spot, and £45. 10/ @ £45. 15/, three months' futures. Best selected, £49. 10/.

Lead.—Demand slow and the market easy at £10. 10/ for Soft Spanish.

Spelter.—Market slow and rather weak at £21. 15/ for ordinary Silesian.

Sheet Mill Scale Settled.

(*By Telegraph.*)

Another meeting between the Conference Committees of the Amalgamated Association and the Iron and Steel Sheet Manufacturers' Association was held in the Times Building, Pittsburgh, last night. The session lasted from about 2.15 p.m. until about 4 o'clock a.m., and the sheet mill scale has been entirely arranged to the satisfaction of both manufacturers and workmen, with the exception of two or three points, which will be arranged in a short time. It is safe to say that no conflict will occur this year between sheet mills and the amalgamated mills.

The Hudson River Ore and Iron Company of Burden, N. Y., declared and paid a dividend of 2 per cent. Wednesday, June 15. The mines of this company are situated at Burden in Columbia County, about 1 mile below Catskill station.

HARDWARE.

Condition of Trade.

THE latter part of June, which closes the first half of the year, usually witnesses a falling off in the demand and a preparation for summer dullness. This year is no exception, and while there is still a fair volume of business in a small way, the demand is not active and orders are mostly for the purpose of completing assortments. The changes which have taken place in prices during the past week are few, and the general tone of the market remains substantially as for some time. There is little complaint in regard to collections and the financial situation seems to be in a satisfactory state.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report a continuance of the active demand noted last week. Orders received are covering the entire range of seasonable goods and staples, with the exception of Sheet Iron, for which the demand at present is as quiet as usual at this time of the year. Houses making a specialty of House-Furnishing Goods are not so well favored as the straight Shelf Hardware people; their trade seems to be feeling the effects of the rains throughout the West quite keenly. The demand for Heavy Hardware is improving again and bids fair to return to the large volume of the early months of the year. A larger business is being done in Iron and Steel, which is probably due to the expected shut-down of the rolling mills and the possible scarcity of this class of products. Wagon stock is quite scarce and prices are stiff.

Notes on Prices.

Cut Nails.—The Cut Nail market has few features that call for special mention. There is some unevenness in the quotations made by different manufacturers, especially in the West, but $1.45 at mill on a 30-cent average fairly represents the market, slightly lower prices being made in some cases. The Eastern mills report that their agreement in regard to prices, deliveries, &c., is fairly well adhered to, and the general quotation remains on the basis of $1.55 at mill for Steel Nails on a 25 or 30 cent average, freight being equalized with competing points as usual. Iron Nails are 3 cents a keg less, and an abatement of 5 cents on carload lots is made.

Chicago, by Telegraph.—The supply of Steel Cut Nails has been decidedly curtailed by the closing down of several large factories in the Wheeling district, and in Ohio and by strikes or other causes in factories further west, and prices are very firmly held in consequence. Manufacturers who have unfilled orders on their books, and who have been compelled to apply to others for Nails to supply their customers, have been unable to secure any at less than $1.62, Chicago, on a 25-cent average. Unless the situation changes soon and more factories are started up, an advance in the price would seem inevitable. The low price of Wire Nails may prevent this from taking place, but, of course, no prediction can be made with any certainty. Some large inquiries recently in the market have been allowed to pass without any attempt being made to meet the views of the purchasers. Jobbers quote $1.65 for carloads from store and $1.70 for small lots.

Wire Nails.—An effort on the part of the manufacturers to withdraw the extreme prices which have been ruling has been attended with a measure of success, and the market in this respect is in a slightly improved condition. It is not, however, characterized by a confident tone, and the quotation of $1.50 to $1.55 for carload lots, at mill, represents the market. Small lots from store in New York are held at $1.80 to $1.85.

Chicago, by Telegraph.—The Wire-Nail situation is unsettled and manufacturers are not maintaining a uniform price. Some of the leading concerns are adhering firmly to $1.70 rates, Chicago, but others are willing to sell as low as $1.55. The trade is apparently well stocked at present, and manufacturers are not receiving many inquiries. Jobbers are quoting $1.60 for carload lots from stock, but name $1.65 to $1.75 for small lots. Some jobbing houses refuse to sell at less than $1.70 in any quantity.

Barb Wire.—As usual at this season, the demand is moderate. Prices are, however, well maintained on a basis of $2.65 for carload lots, at mill. Small lots from store in New York are held at $3.10; carloads, $3.

Chicago, by Telegraph.—Trade is quiet at present, the bad weather in the West interfering seriously with the demand from farmers. Manufacturers are looking forward to an earlier fall trade than usual, basing their hopes on the fact that much less than the usual quantity was marketed in the Northwest during the past two or three months. Carload lots of Painted are quoted at $2.30 to $2.40, and Galvanized $2.75 to $2.80. Chicago jobbers quote $2.50 for Painted, and $3 for Galvanized, in small lots from store.

Copper Goods.—Goods made of Copper or Brass or into which these enter as important materials are generally characterized by a firmer tone, and in some cases slight advances have been made. The goods thus affected are Copper Rivets and Burrs, Jack Chain, Brass Butts, Sheet Brass and Copper, Brass and Copper Tubing, Copper and Brass Wire, &c. The course of prices in these lines depends on the Copper market.

Circles, Segments, &c.—The Association of Copper Manufacturers of the United States issue a price-list of Sheet and Bolt Copper, under date of May 18, 1892. The prices of Sheet and Bolt Copper remain unchanged, also the prices of Cold or Hard Rolled Copper. The changes and additions to the list are as follows:

Circles, Segments and Pattern Sheets.

	Per pound.
60-inch wide and less	3 cents.
Over 60-inch, to and including 96-inch	4 "
Over 96-inch	5 "

advance over price of Sheets required to cut them from All Polished Copper over 20 inches wide, 2 cents per pound additional to foregoing prices.

The effect of these changes will be to increase the cost of Circles, Segments and Pattern Sheets.

Cleves' Angle Trowels.—W. B. Cleves, Binghamton, N. Y., is making three sizes of Angle Trowels, which are listed as follows: No. 1, $36 per gross; No. 2, $30 per gross, and No. 3, $15 per gross. The price ranges from list net to discount 10 per cent.

Glass.—No interesting features have developed in the American Glass market during the past week, and prices remain unchanged. Stocks at factories appear to be large and varied enough to supply demand, although the New Jersey factories are reported as having little surplus stock. The limited demand for goods in other lines extends to the Glass trade, and there is a tendency on the part of dealers to make concessions in prices to secure orders. The condition of the French Glass market is unchanged, prices apparently being well sustained. Quoted prices on Glass are as follows: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 80 and 5 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Anti-Rust.

A CORRESPONDENT writes inquiring for a preparation to prevent polished steel goods from rusting. His store is near the seashore, where the salt air causes rust to accumulate on Cutlery, Shovels, &c. He has been using oil, but finds this undesirable. The suitability of shellac for Cutlery was some time since mentioned in these columns. Yellow beeswax dissolved in gasoline has also been used to keep articles made of planished iron from rusting. We should be glad to have any suggestions which our readers may be kind enough to make on the subject.

Consolidation of Cutlery Interests.

FOR SOME TIME PAST the question as to the desirability of consolidating their interests has been considered by leading manufacturers of Pocket Cutlery with a view to putting this line in a more satisfactory condition. While the project has not been entered into by all the manufacturers, several of them have united their interests and an incorporated company designated as the United States Cutlery Company has been formed, which embraces four well-known manufacturers in this line. The company is incorporated under the laws of New Jersey and embraces the Miller Brothers' Cutlery Company of Meriden, Conn., the New York Knife Company of Walden, N. Y., the Walden Knife Company of Walden and the plant of Dwight Divine of Ellensville, N. Y.

The officers of the company are announced as follows: W. F. Rockwell, president; Thomas W. Bradley, vice president; directors, W. F. Rockwell of Miller Brothers' Cutlery Company, Thomas W. Bradley of the New York Knife Company, E. Whitehead of the Walden Knife Company, Dwight Divine, ex Gov. James E. Campbell of Ohio, George H. Holt of Taintor & Holt, New York; A. L. Pancoast of Jersey City and A. Chamberlain, president of the First National Bank of Meriden, Conn. The capital of the company is stated to be $1,600,000.

The Electrical Supply Co.

THE ELECTRICAL SUPPLY COMPANY, corner Randolph street and Michigan avenue, Chicago, have issued a catalogue devoted to Electric Light and Power Supplies. This is an elegant volume of 496 pages, showing a high class of typographical work, bound in cloth. Illustrations appear on almost every page, together with descriptions of the goods and prices. Referring to the catalogue, the manufacturers state that they have not blindly copied from other trade publications, but on each and every article described in the work they have brought to bear a careful and expert examination and study, and by this means they have been enabled to winnow from its pages all such articles as did not seem to add to the value of the catalogue as a whole. The illustrations are deserving of special mention, as they have been prepared with unusual care. Since the publication of their last catalogue they have added to their organization a completely equipped Electrical Engineering Department, and all new articles before they are regularly added to their line are carefully investigated, and must bear the stamp of approval of the head of the department. Their Electric Light and Power Department No. 2 is separately organized and devoted exclusively to giving particular attention to such goods as are used in electric light and power work. Besides illustrations, price lists, &c., a large amount of valuable information is given in tabulated form, and also index to trade numbers and an alphabetical index. Views are given of their establishment in Chicago and of their factories at Chicago and Ansonia, Conn. The catalogue is exceptionally well arranged, and no care has apparently been spared in making it valuable and complete in all departments.

W. B. Belknap & Co.

W. B. BELKNAP & CO., Louisville, Ky., have issued an elaborate catalogue, known as their No. 7. It is representative of the growth and enterprise of the house.

The business was established in 1840 and incorporated in 1880. The officers of the company are as follows: W. R. Belknap, president; C. J. F. Allen, vice-president; M. B. Belknap, secretary; William Heyburn, treasurer; J. W. Price, assistant secretary; W. S. Park, assistant treasurer; T. H. Hoskins, cashier. The catalogue contains 923 pages, which is nearly double the size of their No. 6 catalogue, issued in 1887. It is substantially bound in cloth and leather, the covers having beveled edges. The catalogue has been arranged with great care, the paper is of excellent quality and the price-lists and cuts are legible and clear. The goods are arranged in departments as follows:

	Pages.
Builders' and Cabinet Hardware	1-271
Tools and Implements	272-496
Household and Miscellaneous Hardware	497-758
Iron, Steel and Heavy Hardware, Carriage and Wagon Material, Plows and Plow Parts	759-915
Tables of Weights, &c.	916-923

This arrangement assures goods of a similar class being found together, and not being scattered through the book The tables of estimated weights, &c., apply to Iron, Bolts, Lag Screws, Wire, Nails, Rivets, Chain, Springs, &c. The necessity of such a large and complete catalogue is explained by the rapid and continuous growth of their business during the past five years.

Joseph F. McCoy Co.

JOSEPH F. McCOY COMPANY, 26 Warren street, New York, importers and dealers in English, German and French Cutlery, Hardware, House-Furnishing Goods, Tools and Saddlery Hardware, have recently issued an attractive catalogue of 148 pages, fully illustrated, divided into two sections. Section A deals with Band Saws, Bengal Razors, Chain, Horse and Toilet Clippers, Brass Wire Cloth, Cold Rolled Steel, Cork Screws, French Plyers, Vises, Coffee Mills, Plane Irons and Pincers, Sash Line, Key Rings, Measuring Tapes, Razor Strops, Shears, &c. Section B contains a large assortment of Pulley Blocks, Rail Benders, Cargo and Derrick Winches, Ratchet Drills, Screw Punches, Hydraulic and Lifting Jacks, Miners' Lamps, Ratchet Drills, Hammers, Track Mauls, Picks, Pipe Cutters, Tongs and Wrenches, Punches, &c.

On page 2 attention is called to the goods manufactured by the following concerns, for whom they are sole agents in this country—viz:

Monarch Cutlery Company, Pocket Cutlery, Scissors, Tools, &c.
Irving Cutlery Company, Pocket Cutlery, Scissors, Tools, &c
George Butler & Co., Razors, Table Cutlery, &c.
Warrington Shear Company, Warranted Shears, Scissors, &c.
Peugeot Frères, Lion Fand Saws, Tools, &c.
Gueutal & Sons, French Plyers and Jewelers' Tools.
Coates Clipper Mfg. Company, Patent Horse and Hair Clippers.
Tangyes, Limited, Hydraulic Jacks, Blocks, &c.
Wm. Eades, Son & Co, Patent Differential Pulley Blocks.
Weiller & Co., Brass Wire Cloth.

In addition to the above they deal largely in George Wostenholm & Son's and Wade & Butchers' Cutlery, Razors, Tools, &c., Weston's Pulley Blocks and Ratchet Drills, Chesterman's Measuring Tapes and Rules, &c. The catalogue contains some new goods and is well arranged. It will be appreciated by the trade.

Australian and New Zealand Freights.

NEARLY THREE YEARS AGO Australian importers concluded they were paying too much for freight from the States and were not in a position to compete successfully with goods imported from Great Britain and the Continent, rates then running from 25 to 27½ cents per cubic foot to Australia and 32½ cents to New Zealand ports. The current rates now are 8 cents to Australia and 15 cents to New Zealand, but the price has been 7 to 7½ cents to Australia. Believing these figures were kept abnormally high by a tacit agreement among the agents of the lines plying between New York and the colonies, some 40 leading importers in Australia and New Zealand organized a stock company called the Australian-American Shipping Company, Limited, and made Arkell & Douglas, New York (also stockholders), their agents in this country, the main object being to get for the incorporators freight at charter rates, making such profit as they could on miscellaneous shipments. The new company were capitalized at £100,000 sterling, between £31,000 and £32,000 being subscribed and a little over £18,000 paid in, according to balance sheet January 1, 1892.

At that time rates were high in consequence of a scarcity of tonnage. Since then, as is well known, vessels have been more and more plentiful owing to the depression abroad, there being now a large number of ships out of commission in Great Britain. The collapse of the Australian boom two years ago, from which that country is still suffering, has not helped matters. The agents of the old established lines from this port—namely, R. W. Cameron & Co., Mailler & Quereau and Arnold, Cheney & Co.—together with H. W. Peabody & Co., recently of Boston, but now of New York, felt the field was fully covered and realizing there was not sufficient profitable business for all, decided to work together to force the Australian-American Shipping Company out.

All of the four firms contesting the ground with the new company, except H. W. Peabody & Co., are mainly vessel agents. Arkell & Douglas, in addition to the agency of the new line, have done a large business for many years as export commission merchants, thereby giving them an opportunity to recoup some of their losses as stockholders.

When a vessel in berth reaches a certain stage in loading such freight as is not offered must be added to make the voyage profitable. This has led to such staples as rosin, plaster, case oil, &c., being sent out on consignment, being in effect a speculation. Some of these goods have depreciated about 25 per cent., which has not bettered the situation. There seems to be a determination among those longest in the field to prevent, if possible, the new comers from occupying it permanently.

Ideas for Hardware Merchants.

THE ACCOMPANYING ARRANGEMENT of Tools into letters is found on the front page of "Ideas for Hardware

Merchants,"* by D. T. Mallett, New Haven, Conn. The subjects treated are Starting a Hardware Store, What Hardware Dealers May Sell, Hints About Inventory, Behind the Desk, Ratio of Store Expenses to Sales, Retail Advertising, System in the Store, The Use of a Store Window, The Holiday Trade in Hardware, John Jones, Jr., The Successful Merchant, The Parable of a Foolish Trader, Cordiality Between Competitors, The Commercial Value of a Smile, More About Advertising, Business Education, The Fable of the Magnet, Why One Merchant Failed, The Other Half, Cash or Credit, Don't Get Into a Rut, The Value of Price-Lists, A Store Library, Books for Hardwaremen, &c. Mr. Mallett, because of his training and business experience, is particularly adapted to treat these live subjects in a practical and interesting manner. He states that his object in writing this trade book is not to instruct, but to simply recall to mind some slumbering knowledge which the "man that meddles with cold iron" has urgent need of in his peculiar calling. The chapter on Ratio of Store Expenses to Sales is a most practical and interesting one, as the information given is of a definite kind, being illustrated by figures. The chapter is begun with this statement:

The regulation of the expense account of a store is one of the most difficult problems which confronts the proprietor, and it is to the perusal of this account to which he is indebted for a majority of the wrinkles which time and worry bring to all of us. To the careless or thoughtless manner with which this account is suddenly reduced or increased is due at least 90 per cent. of the business failures of our times.

An example is given of a business with a capital of $10,000, sales per annum $25,000 and a gross profit (30 per cent.) amounting to $7500. The expense account, of which each item is enumerated, amounts to $6000, which is 24 per cent. of the sales. It is explained that under this set of expenses a net profit accrues to the proprietor of $1500, which covers his personal expenses, and 6 per cent on his capital, which represents a gain of $600 to be added to his stock the following year. The business is followed year by year until the capital in stock reaches $20,000; sales per annum $50,000, and gross profits (30 per cent.) $15,000. The expense account shows a total of $12,000, which, however, is but 24 per cent. of the sales, the same as before. It is a great satisfaction for a merchant to be sure he is doing business in a safe manner, and such figures enable one to arrive at a conclusion, whether satisfactory or not. The book is well printed on excellent paper, and contains over 100 pages of instructive reading matter.

* For sale by David Williams, 96-102 Reade street, New York. Price, $1, postpaid.

Henry Disston & Sons' Factory.

THE AREA inclosed for factory purposes by Henry Disston & Sons, at Tacony, one of the suburban towns of Philadelphia, and the larger part of which is occupied by buildings of various kinds in connection with the works, is 38 acres, including a water frontage on the Delaware River of 1500 feet, where vessels are loaded with goods for distant transport at the wharves belonging to the firm, a minimum depth of 14 feet of water rendering transmission by large-sized vessels practicable.

Twenty-one buildings of various kinds are included in the establishment, some of them of very great proportions, the two main edifices measuring about 700 feet in length.

At present 1900 hands are on the firm's pay roll, the number varying according to special requirements, although the tendency is to a pretty steady increase as new departments are added and new lines of goods are introduced.

The number of Hand Saws produced and shipped weekly reaches a total of 2500 dozen, or more than 1,500,000 a year. These Saws are made of every size and description known, ranging from the great 14-foot "two-man" Saw for the California trade to the toy tool with a length of but 3 or 4 inches. Great strides have been made in this country during the last few years in the art of saw grinding. The present system pursued at the Disston works for grinding the blades by machinery possesses incalculable advantages over the old manual method formerly in vogue, by which it was almost impossible to get the thickness, weight and taper of the tools uniform and exact in the various grades. The Saws are now ground with a steel counter plate beneath each blade, so that the taper from the thicker back, against which the thinner portion of the counter plate rests, to the toothed edge, where the thick side of the counter plate meets it, is always made perfect and uniform, all Saws of one particular grade having exactly the same weight and taper.

The number of processes which a Saw undergoes in the course of manufacture is surprising to the uninitiated and would be tedious and unnecessary to recount. At these works the operation may, however, be seen in its fullest perfection, from the rolling of the raw material into ingots, after having been converted into steel, to the period when the completed tool is packed for shipment.

One of the most interesting and novel machines used in Hand Saw manufacture is one for toothing the blades. Four of these machines are in use here, each capable of operating upon about 175 dozen Saws daily, a performance equal to what 17 or 18 boys would have been calculated to accomplish under the old system. The machines are adapted for cutting teeth of any size from 4 to 30 per inch, and the work they turn out is, for exactness and efficiency, unsurpassable. Any two Saws of the same grade cut by them, when placed with their toothed edges locked together, present an apparently unbroken surface, so accurately do the teeth fit into each indentation. This exactness was impossible by the former system of tooth cutting, and the economy of time and labor gained by the adoption of the new machinery has been vast. Four men, with the aid of four machines, are now doing the former work of about 70 boys.

Besides Hand Saws an immense quantity of Circular Saws, Band Saws and other varieties of these tools are turned out yearly. Of Circular Saws the output last year was 50,000. Of late years the demand for the "inserted tooth" variety of

these Saws has greatly increased, and a separate department of the works is kept busy in making and fitting these removable teeth, which by a simple locking contrivance can be attached to or taken out from the body of the tool at will, and so can be sharpened or replaced when worn out or broken. The Files, which next to Saws are the staple production of this house, reach an average daily figure of 1000 dozen, though as many as 14,000 have been turned out in a single day.

Among other large items of expenditure are 900 tons of Grindstones per annum. One hundred of these stones are in constant work and 1000 are retained in stock in the sheds—mostly procured from Ohio.

Seven engines at different points on the works supply the necessary power, amounting to a total of 2500 horse power; no less than 25,000 tons of coal being consumed annually. The furnaces in the mills are, however, heated by gas manufactured on the premises by means of a Loomis gas producer, this form of fuel being found to maintain a more regular heat than any other.

Saws and Files are not the only variety of tools manufactured by the Disstons, although it is by them that the name of the firm is most widely known. Tools of almost all kinds for the use of carpenters, bricklayers, gardeners, machinists, &c., are in their catalogue, and are being turned out regularly. To merely enumerate the different departments, of which there are nearly 50, each with its own responsible head, would take more space than is available. But brief mention should be made of the wood working department, where the tool handles are made and other necessary wood work is carried out. The quantity of material passing through these shops in the course of a year is immense, over 1,000,000 feet of beech, apple walnut, maple, cherry and other hard woods being used for Saw Handles alone. The machinery for shaping these articles is wonderfully ingenious and efficient. The lumber sheds, containing a stock of about 2,000,000 feet, cover an area of 10 acres.

There are two large rolling mills included in the works, and these are the only portions of the manufactory which run night and day, an 11-hour day being, we believe, the rule with all the remainder of the establishment.

A new converting furnace, now in course of construction, is the latest addition to the plant.

The Pennsylvania Railroad runs a track through the firm's premises, carrying away each morning a goodly load of boxes in their freight cars, to be distributed far and wide. The firm have also their own private tracks, by which their goods are conveyed to the city and other points, much being, as we noted above, shipped by water.

The works are self-supporting in the matter of machinery. All machines have been built in the establishment, and a large machine shop is kept in full employment on the construction and repairs.

AUSTRALIAN NOTES.

ONE of the oldest wholesale Hardware houses in Melbourne, Long & Co., were forced in May to call a meeting of creditors. This concern have been in business over 30 years and were large buyers of American lines.

There seems to be no light breaking in the very serious depression of trade and finance at Melbourne. Over $35,000,000 of depositors' money is locked up in broken institutions in this city, aside from the loss to shareholders, which has brought many of the leading merchants from wealth to bankruptcy. It is thought not unlikely that other houses well known to the trade will have to ask extensions from their creditors or make some compromise in view of the present disturbed financial condition.

Trade Items.

ANNOUNCEMENT IS MADE to the effect that the Barney-Cavanagh Hardware Company have purchased the entire stock of goods, promissory notes, book accounts, &c., of the firm of Barney, Cavanagh & Long of Birmingham, Ala. The Barney-Cavanagh Hardware Company were organized by parties interested in the former firm, and their friends, with an increased capital to better facilitate the handling of their growing business. W. Harry Long, who is referred to as one of the best posted Hardwaremen in the South, is manager of the new company. The other officers are as follows: G. R. Vaughan, president; G. B. Cavanagh, vice-president, and H. L. Hodges, secretary. The company state that they will carry one of the largest and most complete stocks of Hardware in the South, and that orders intrusted to them will receive prompt attention.

GILBERT M. SMITH in a circular announces that he has recently opened an office at 79 Dearborn street, Chicago, where he will represent direct a few leading manufacturers of Brass and Copper, Bare and Insulated Copper Wire, Hardware specialties, &c. His experience of 11 years with the Ansonia Brass & Copper Company, during the past four of which he has acted as manager of their Chicago branch, is referred to as giving him confidence that he can successfully attend to the requirements of the business.

THE MANN EDGE TOOL COMPANY, Lewistown, Pa., were recently incorporated under the laws of Pennsylvania for the purpose of manufacturing Edge Tools, including Axes of all kinds. The capital of the company is $75,000. The plant is being built of brick, with floor space of 20,000 square feet. The power is water, 400 horse. We are advised that the Axe factory will be erected with special regard for convenience and economy, and will have a capacity of 20,000 dozen per annum. The company advise us that they intend to manufacture only the highest grade of Axes and to sell them fully warranted at the lowest prices. The company hope to be ready to fill orders by September 1. Joseph R. Mann, formerly of R. Mann & Sons, Mill Hall, Pa., is president of the new company.

MITCHELL, LEWIS & STAVER COMPANY, Portland, Ore., have recently added to their extensive business facilities for the construction and erection of complete wind mill plants of all sizes and styles, including sinking wells of any depth, erection of towers and tanks, laying pipe, furnishing and setting pumps of all kinds, and furnishing the necessary power, either wind, steam or hydraulic.

C. W. WOODFORD, dealer in Hardware, &c., Port Henry, N. Y., will erect an addition to his store by which its capacity will be doubled.

WE HAVE RECEIVED from the Ludlow-Saylor Wire Company, St. Louis, Mo., a copy of a recent circular issued by them, showing a few of the many designs made by this house in Metal Work. They advise us that their factory is at present crowded with work similar to that shown in the catalogue, for buildings not only in St. Louis, but in neighboring cities, and further advise us that they are prepared to execute orders for this class of work of superior quality. They are at present engaged in getting up a new catalogue of Art Metal Work, which will shortly be ready for distribution to the trade.

C. C. GROW is now carrying on the business formerly conducted under the style of Baxter & Grow, dealers in Hardware, &c., Barton, Vt., having purchased Mr. Baxter's entire interest in the business.

THE WESTERN NAIL COMPANY, Battle Creek, Mich., are manufacturing, in addition to Wire Nails, Brads, &c., Wire Sash Pins or Sash Dowels. These are made in any length desired, from ½ inch up, and are put up in 25, 50 or 100 pound packages. The manufacturers state that they save their cost in the labor of making and boring for wooden pins, and are more convenient for use. The points are not intended to pass entirely through the sash, so there is but one side of the work to finish. The Pins are barbed, to prevent them from ever working loose.

A PRICE-LIST of Joseph Rodgers & Sons' Cutlery has been issued by Alfred Field & Co., 93 Chambers and 75 Reade streets, New York, who are sole agents for the United States. The list is made to conform to the illustrated catalogue recently issued by Alfred Field & Co., and is more complete than the price-list of these goods issued in 1890. The list prices in this case take up the entire 14 pages of the book, and are comprehensively arranged under the column headings of No., Plate No., List per dozen. The numerical arrangement of the numbers of the articles is a feature of the work which adds greatly to its convenience. The names of the articles are in bold faced type, and so arranged as to obviate any possibility of confusing the lists to which they belong with other lists. The prices are given in dollars and cents, and the admirable arrangement of the price-list indicates much labor and time. Alfred Field & Co. will supply the trade with these lists upon application.

TATE & CO., Malden, Mass., issue a circular, under date 8th inst., in which they notify the trade that they are the owners of all rights under United States Letters Patent No. 352,499, dated November 9, 1885, for an improvement in Wire Picture Cords, which consists of a straight Wire center or core, having a plurality of Wires braided there around. They then state that some manufacturers have deliberately undertaken the infringement of their patent, and suit has accordingly been commenced against one of them. It is stated that all infringers will be prosecuted.

ON JUNE 13 the Hardware store of Huddle & Shoemaker, Ashley, Ohio, was entered by burglars and about $50 worth of Revolvers and Cutlery stolen. The authorities of that place have offered a reward for the capture of the thieves and the recovery of the goods.

H. C. MYLANDER, proprietor of the City Hardware Store, Oak Harbor, Ohio, has issued a catalogue for his local trade, in which are given illustrations and the principal points of the Farming Implements, Phætons, Buggies, Carts, Wagons, &c., carried by him. While the illustrations and descriptions of this class of goods fill the pages, headings are given at the top of each page calling attention to such goods as Cooking and Heating Stoves; Paints, Oils, Brushes, Glass, Putty; all kinds of Machine Belting; Tin Ware, Copper Ware and Cuttlery, &c. A catalogue of this kind placed in the hands of country customers cannot but yield results large in proportion to the cost of the book.

Price-Lists, Circulars, &c.

JOHN A. ROEBLING'S SONS COMPANY, Trenton, N. J.: Iron and Steel Wire Rope, Iron, Steel and Copper Wire, Galvanized Telegraph Wire, Insulated Electric Wire

and Wire Cloth and Netting. Their catalogue gives illustrations, prices and various tables of weights, sizes, &c., of these goods.

THE GEO. WORTHINGTON COMPANY, Cleveland, Ohio: Discounts from prices in their catalogue of 1892. They state that in issuing this, their first Discount Sheet, their object has been to give quotations which are merely a guide to the relative value of the goods enumerated in their catalogue. They solicit mail orders at their lowest prices ruling on the day of shipment. They also issue a large number of pages to be pasted in their catalogue. Particular attention is directed to their large stock of Blankets and Robes for the season of 1892.

LUNKENHEIMER BRASS MFG. COMPANY, Cincinnati, Ohio: Brass and Iron Goods and specialties for Steam, Water, Gas, Oils, &c. Their catalogue of 98 pages illustrates these goods, giving descriptions and price-lists. An admirable feature in the arrangement of the book is a blank space near each price or list of prices, in which the discount to which the price is subject may be transferred from the discount sheet. The manufacturers have aimed to make the catalogue plain, brief and practical, approaching somewhat a pocket edition. Attention is directed to several new specialties, and the manufacturers state that they make only first-class high-grade goods, using in their construction their peculiar mixture of composition, which accounts for the tough, close-grained quality of their steam goods.

H. GRASS, 138 North Third street, Philadelphia, Pa.: Turned Wood Ware. Wood Door Knobs are shown in new and fancy patterns, with shanks finished in Copper plated Iron, Bronze plated, Bronze covered, Solid Bronze, Silver, Oxidized Silver and Oxidized Copper plated and Boston finish. The roses are of Wood, also of Metal, finished to correspond with the shanks. The Carlisle Chisel Handle, manufactured by the same firm, has a vulcanized-rubber plug inserted in the outer end, protected by a wrought-iron ferrule sunk around it. Wood Base Knobs are also made in all the popular woods.

EMPIRE PORTABLE FORGE COMPANY, Lansingburg, N. Y.: Empire, Western and Universal Portable Forges; Empire and Western Tuyere Irons, Hand Blowers, Small Blowers, Empire Sash Pulleys, round end; Machine Sash Pulleys; Square Face Sash Pulleys, fine Noiseless Sash Pulleys, Empire Pulleys, &c. The manufacturers state that in appliances for the utilization of air they have confined their efforts strictly to Portable Forges, aiming to produce the largest and most perfect line. They call attention to the fact that all their Forges and Blowers are made with Steel Shafts and Pinions.

L. L. LORD, Meadville, Pa.: Plumbers', Gas and Steam Fitters' Special Tools, Vises, Specialties, &c. A recent pamphlet is devoted to illustrations and descriptions of Bar Pipe, Pipe and Bench and Parallel Bar Pipe Vises, also to various styles of Malleable Pipe Vises.

GEO. D. LEONARD, Springfield, Mass.: Feed Bags. Various styles are illustrated, showing the Iroquois Chief, with hinge bottom, leather ventilator or wire ventilator, a folding Bag with pulley attachments; Iroquois Maid, ventilated, with iron bottom, and the Iroquois Maid, doweled rabbeted wood bottom. The Bags are referred to as being a blessing to the horse, as with these Bags he may easily get his feed and enjoy it.

BUTLER HARDWARE COMPANY, 23 Warren street, New York: Catalogue of Builders' Hardware. The company call attention to the fact that in addition to the goods manufactured by themselves, they carry in stock or can furnish at short notice a complete line of Builders' and Miscellaneous Hardware made by some eight or ten leading manufacturers. Among the goods illustrated is a large line of Bolts, Butts and Hinges, Locks, Knobs, Coat and Hat Hooks, Drawer Pulls, Chest Handles, Jail Locks and Stable Fittings.

STAR LOCK WORKS, Hillebrand & Wolf, proprietors, Philadelphia, Pa.: Trunk and Valise Locks, Toy Trunk Locks, Trunk Catches, Padlocks with Hasps, Trunk Stays, Corners, Name Plates and Tray Lifters, Wide Shackle Scandinavian Padlocks, Scandinavian Padlocks with Drilled Keys and with Flat Keys, Charm, Dog Collar and Bicycle Locks, Oblong Shaped Scandinavian Padlocks, Crab and Spring Padlocks, Rim Dead Latches, Door Springs, Keys, &c. The catalogue is fully illustrated, with price-lists, the cuts being full size of the goods they illustrate.

It Is Reported—

That John W. Jochim's Hardware store at Ishpeming, Mich., was looted by robbers on the 7th inst., valuable booty being secured.

That on July 1 the firm of Sullings & Kingman, New Bedford, Mass., will dissolve, and their large store be occupied by De Wolf & Vincent, who have purchased the stock and good will and will remove from their present location at the corner of Union street and Acushnet avenue. The firm of Sullings & Kingman is one of the oldest establishments in New Bedford. It commenced business at the present stand in July, 1845, and has been in continuous operation ever since. The firm of De Wolf & Vincent is composed of Arthur W. De Wolf & Mark T. Vincent, who have had a long experience in the Hardware and Agricultural Implement business.

That the Hardware firm of Drake & Graham, Le Mars, Iowa, have sold out to Phelps & Whitnel and retired from business.

That Winfield, Kan., will have a new Hardware store conducted by Coffin Bros.

That the store of J. B. Gillette & Co., Le Roy, N. Y., dealers in Hardware, Stoves, &c., was damaged by fire a short time since.

That J. Carney, dealer in Hardware, Eden Valley, Minn., has disposed of his business.

That W. J. Jones has succeeded George Mayne in the Agricultural Implement business at Ekin, Ind.

That A. Templeton has succeeded G. C. Templeton & Co. in the Implement business at Mount Vernon, Ind.

That the Hardware business formerly carried on by A. J. Montgomery, recently deceased, Georgetown, Ky., will hereafter be conducted by John S. Montgomery.

That Jutras & Hobensack, Hardware merchants, Lewiston, Mont., have been succeeded by Hobensack & Sloan.

That Hult Olof has embarked in the Hardware business at Vernon, Neb.

That the Implement firm of Sandy & Moore, Urbana, Ohio, have sold out to Silas A. Sandy.

That Punxsutawney, Pa., has a new Hardware store, the proprietor of which is J. W. Osterhaut. Mr. Osterhaut was formerly in business at Williamsport.

That Enoch E. Smart is a new Implement dealer at New Lisbon, Wis.

That Victor Husting has entered the Hardware business at Theresa, Wis.

That J. H. Vernon has bought a Hardware store at Iowa Falls, Iowa.

That the Hardware store of Frank Sefert, Jefferson, Wis., was robbed on the 8th inst.

That C. M. Buck, Hardware, Stove and Agricultural Implement merchant, Howard, Minn., has been succeeded by Buck & Hoover, who will hereafter conduct the business.

That Phillip & Martin's Hardware store at Wingate, Ind., was recently plundered by burglars, and a considerable quantity of Cutlery and Revolvers secured.

That the Gebhard Hardware Company, Austin, Texas, have removed to larger and more commodious quarters.

That Riggs Bros., Glenwood, Minn., dealers in Hardware, Implements, &c., have sold out.

That H. J Shirk has commenced the Hardware and Stove business at La Paz., Ind.

That George Mayn is a new Implement dealer at Tipton, Ind.

That Bloomfield, Iowa, has a new Hardware firm, the style of which is Wilkinson & Cook.

That Nolan & Engler recently entered the Hardware business at Emmettsburg, Iowa.

That F. M. Thompson has engaged in the Agricultural Implement business at Fenton, Mich.

That Kelley & Kenning are now conducting the Hardware business at Manson, Iowa.

That E. E. Williams & Co., Hardwaremen, Boxeman, Mont., have been succeeded by Leroy & Ellis.

That Crestline, Ohio, has another Hardware and Stove store. It is being conducted by Brown & Trimble.

That N. Ewing & Co. have opened a Hardware store at Dunkirk, Ohio.

That Farnham & Albee lately commenced the Hardware business at Summerville, Vt.

That the Arthur Flagg Company is the name of a concern which has just commenced the Hardware business at Edgerton, Wis.

Exports.

PER BARK ESSEX, JUNE 1, 1892, FOR AUCKLAND, NEW ZEALAND.

By W. H. Peabody & Co.—½ dozen Hoes.
By R. W. Forbes & Son.—120 dozen Handles, 1 case Carriage Hardware, 23 packages Hardware, 1 case Pumps, 2 cases Rakes, 5 cases Hammers, 3 cases Scales, 1 case Tinware, 11 packages Fruit Jars, 8 dozen Axes.
By W. H. Crossman & Bro.—1 case Razor Strops, 1 case Lanterns, 1 case Hardware.
By the F. B. Wheeler Company.—1 case Hardware, 9 packages Fruit Jars, 2 crates Churns.
By Strong & Trowbridge.—10 cases Axes, 6 cases Agricultural Implements, 2 cases Saws, 2 packages Apple Parers, 1 case Plumbs and Levels, 1 case Twine, 1 case Hammers, 1 case Mangles, 1 case Nails, 57 cases Fruit Jars, 3 cases Stone, 3 cases Plows, 4 crates Churns, 27 cases Handles.

FOR WELLINGTON.

By S. Hoffnung & Co.—2 cases Air Guns.
By Meriden Britannia Company.—7 packages Silver-Plated Ware.
By Lalance & Grosjean Mfg. Company.—2 cases Household Utensils.
By F. H. Lovell & Co.—1 case Lamp Goods.
By the F. B. Wheeler Company.—4 cases Hardware.
By H. W. Crossman & Bro.—2 crates handles, 2 cases Rakes, 1 case Lanterns, 103 cases Handles, 70 cases Axes, 13 crates Churns, 17 cases Horse Nails, 1 case Lead Pencils, 3 packages Pumps, 12 cases Stoves, 20 kegs Nails, 14 cases Scales, 32 packages Hardware.
By W. H. Peabody & Co.—2 cases Farming Implements, 1 case Handles, 6 cases Bolts, 2 cases Horse Nails, 9 cases Plows, 13 packages Hardware, 1 bundle Cordage, 5 packages Lamp Goods, 2 cases Bolts, 1 case Cages, 4 crates Churns, 8 cases Nails, 13 packages Lawn Mowers, 6 crates Stoves.
By Arkell & Douglas.—1 case Lampware, 1 case Wire, 1 case Brushes, 1 bundle Cordage, 1 case Wood Spoons, 1 case Handles, 1 crate Sad Irons, 6 cases Bolts, 2 cases Saws, 6 cases Hardware, 2 cases Rakes, 2 crates Handles, 18 cases Axes, 10 cases Horse Nails.
By R. W. Forbes & Son.—10 cases Horse Nails, 1 case Shovels, 24 boxes Horse Nails, 1 case Shovels, 4 cases Horse Nails, 1 case Shovels, 12 packages Fruit Jars, 22 packages Handles, 4 cases Hammers, 3 cases Axles, 1 case Picture

Wire, 1 case Pumps, 12 cases Scales, 1 case Sowers, 1 case Oil Stone, 13 cases Hardware, 28 boxes Axes, 54 packages Hardware, 5 cases Wringers, 3 boxes Bolts, 2 cases Britannia Ware, 1 case Shovels, 8 packages Rakes.

By McLean Bros. & Rigg.—1 case Cork Pullers, 18 cases Horse Nails, 23 cases Lawn Mowers, 2 bundles Handles, 6 cases Hardware, 2 cases Bird Cages, 1 case Axles, 1 case Carpet Tacks, 1 case Air Guns, 1 case Carriage Hardware, 3 cases Wire Goods, 9 packages Pulleys, 2 cases Stepladders, 5 cases Farming Tools, 5 packages Hardware, 1 case Shovels, 1 case Braces, 5 cases Axes, 1 case Handles, 5 cases Saws, 1 case Lawn Mowers, 14 cases Fruit Jars, 1 case Anvils and Vises, 3 cases Wringers, 3 cases Handles.

PER BARK HERBERT FULLER, JUNE 2, 1892, FOR CAPE TOWN SOUTH AFRICA.

By Boston & Lockport Block Company.—1 cask Pulley Blocks.

By Naase & Vaughan.—2 cases Wringing Machines.

By L. D. Crossmond & Co.—76 cases Agricultural Implements.

By Johnston Harvester Company.—134 packages Harvesting Machinery.

By M. Berliner.—2 cases Scales, 1 case Blocks, 12 cases Axles.

By W. B. Fox & Bro.—12 cases Edge Tools, 7 cases Hardware, 1 case Agricultural Implements, 1 case Scythe Stones.

By R. W. Forbes & Son.—77 kegs Nails, 3 cases Hardware, 6 dozen Axes, 8 dozen Traps.

By Strong & Trowbridge.—18 cases Axes, 6 dozen Hammers, 6 dozen Handles.

By W. H. Crossman & Bro.—55 cases Hardware.

By Coombs, Crosby & Eddy Company.—20 kegs Brads, 10 kegs Nails, 5 racks Churns, 6 crates Refrigerators, 18 cases Edge Tools, 1 case Hardware, 29 packages Hardware, 30 kegs Iron Nails, 8 cases Edge Tools, 1 case Wood Handles, 5 cases Hardware, 1 package Fly Traps, 1 case Ladders.

PER BARK STAR OF THE EAST, JUNE 10, 1892, FOR DUNEDIN, NEW ZEALAND.

By Winchester Repeating Arms Company.—3 cases Cartridges.

By W. K. Freeman.—24 cases Horse Nails, 2 cases Hardware, 2 cases Pumps, 2 boxes Plated Ware, 10 cases Horse Nails.

By Meriden Britannia Company.—2 boxes Plate Ware, 18 packages Lampware, 1 box Silver Ware.

By S. Hoffnung & Co.—23 packages Lampware, 23 cases Lawn Mowers.

By Strong & Trowbridge.—2 bundles Handles, 6 cases Wringers, 2 cases Meat Choppers, 1 crate Sad Irons, 13 cases Lawn Mowers, 7 cases Stoves, 4 cases Wringers, 3 Stoves, 2 cases Handles, 1 case Braces, 1 case Hard ware, 1 case Stone, 1 case Pumps, 1 case Mangles, 1 case Lampware, 1 case Braces, 1 package Churns, 1 case Nuts, 1 case Lanterns, 1 case Seed Sowers, 1 case Egg Beaters.

By Norton & Son.—80 packages Agricultural Implements.

By H. W. Peabody & Co.—3 cases Hardware.

By R. W. Forbes & Son.—35 cases Axes.

By Hartley & Graham.—25 cases Cartridges, 3 cases Empty Shells, 1 case Caps, Primers, &c., 5 cases Cartridges, 1 case Fire Arms, 1 case Shot.

FOR LYTTLETON.

By H. W. Peabody & Co.—2 cases Hardware.

By Norton & Son.—183 packages Agricultural Implements.

By Aifred Field & Co.—1 case Choppers.

By Meriden Britannia Company.—31 packages Silver-Plated Ware, 22 package Lamp Goods, 3 boxes Silver Ware.

By Hoadley & Co.—1 case Hay Forks, 1 case Scythe Snaths, 4 cases Hardware, 2 cases Hoes, 1 case Wrenches, 2 cases Pumps, 4 bundles Hay Rakes, 2 cases Handles.

FOR DUNEDIN.

By the F. B. Wheeler Company.—9 cases Hardware.

By Walter A. Wood Mowing & Reaping Machine Company.—20 Harvesters and Binders, 20 Transports, 5 bundles Carriers.

By Fitt & Scott.—30 Harvesters and Binders, 30 Transports, 5 Mowers, 15 Harvesters and Binders, 15 Transports.

FOR LYTTLETON.

By the Coombs, Crosby & Eddy Company.—6 cases Handles, 4 crates Churns, 2 cases Bush Hooks, 3 cases Steel Axes, 1 case Hatchets, 1 case Saws, 4 cases Horseshoe Nails, 1 case Locks, 1 package Scales, 2 cases Grindstone Fixtures, 8 packages Lamp Goods, 1 case Hardware, 1 case Hay Racks, 1 hogshead Pumps, 1 case Snaths, 1 case Balances, 1 case Hardware, 1 case Hammers, 2 cases Wrenches.

By Walter A. Wood Mowing & Reaping Machine Company.—525 packages Harvesters and Binders, 75 packages Transports, 10 packages Carriers, 125 packages Mowers, 30 Reapers, 30 Hay Rakes.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

It is a remarkable fact that some alleged reports of the condition of the market for Paints and Colors indicate a stupid condition of affairs all along the line, just as they have since the turn from winter season quietude up to the present time, during which interval manufacturers and jobbers have experienced a full average although somewhat uneven business. Instead of being dull, current business is fully in line with what is customary at this season of the year, and it needs only the exercise of ordinary inquisition to obtain satisfactory proofs of the accuracy of this statement from manufacturers and jobbers. In no department is there any decided activity. In some the distribution may be rather tardy; but, as a whole, the movement of goods into the channels of final distribution and consumption is doubtless good. Were it not for some irregularity in prices consequent upon sharp competition the general run of reports would doubtless be more roseate. Changes in prices have been very few and unimportant.

White Lead.—No changes in corroders' prices have been made, although a further decline in cost of crude material has taken place, and up to this writing no indications of any impending revision of list rates are visible. To the contrary, it would appear that corroders are of the opinion that no more Lead would be sold if the price was lowered, and that they are acting accordingly. The distribution keeps up well in this locality, and is reported to be fully up to the June average in other quarters. In the jobbing trade official rates are still disregarded, just as they have been throughout the season. Mixed Leads have been moving very fairly and at practically former prices for the various compounds.

Red Lead, Litharge, &c.—There is no perceptible variation in the demand for any variety of Red Lead, Litharge or Orange Mineral, and prices all along the line remain exactly as they have been for some time past. The offering is of ordinary character, indicating that manufacturers and importers keep closely sold up.

Zincs.—About the only feature of interest in this line is the introduction of a new high-grade domestic product manufactured by the French process and guaranteed to be equal to the best imported. Zinc. There are now at least two home manufactures of the high-class Oxide, both of whom claim that their goods are second to none in quality and cheaper than foreign brands. In the ordinary domestic product business continues on about the usual lines, and there is no departure by manufacturers from the prices that have ruled for some time past. Imported Zincs are without change in value, but rather slow of sale.

Colors, &c.—In the staple lines of Dry and Oil Colors there continues to be a good seasonable trade, although the movement is chiefly of a jobbing nature, and prices remain as they have been for some time past. The movement of ready-mixed Paints is also represented as being fully up to the average for the season, and manufacturers assert that they fail to discover any loss of trade since the Lead Trust innovation with prepared Tinting Colors. Prices for the more staple lines remain without change, and the market preserves very good tone.

Paris Green is meeting with somewhat irregular yet very good sale, and it is asserted that cheap outside lots have been nearly or quite all disposed of. Some manufacturers claim that they are busily engaged on old orders and have no surplu, on hand. All are not in the same positions however, and there is no real scarcity of the insecticide at old prices.

Oils and Turpentine.

The market for Animal and Vegetable Oils has been bare of new or really interesting features. As a matter of fact, the demand, the offering and the line of prices are practically the same as they were a week ago and the surroundings are without change from which either buyers or sellers can claim any decided advantage. With no incentive for departure from conservative action, buyers have taken hold in an indifferent way and purchased only as well-defined wants dictated. Still, the distribution appears to involve quite the average quantity of most Oils and proves to be sufficient to keeb prices quite steady.

Linseed Oil.—Jobbers' stocks of cheap Oil are believed to be low, since nothing is offered to the wholesale trade from second hands, but the demand from that quarter and from large consumers is momentarily rather slow. However, city crushers report that their sales are of volume that leaves no cause for complaint, and the moderate quantity of outside brands offered in this locality seems to be quietly disposed of. Competition is decidedly temperate, suggesting harmony among producers generally, and prices are steady, with the range of quotations the same as it has been for several weeks past.

Cotton Seed Oils.—Continued apathy on the part of both home and export buyers is about the only feature in this line. The quiet condition of trade leads to an impression that the market is not as steady as surface appearances might indicate, but neither crude nor refined Oil is offered more freely, and no decline in values is reflected in the sales that have been made. Nearly all the mills are now idle, the bulk of supply of Oil being controlled by the two leading companies and held firmly for full former prices. While undoubtedly quiet, the market seems to be in good position statistically.

Lard Oil.—Continued high cost of raw material keeps the market for prime Oil very firm, as city pressers are turning out comparatively little beyond what may be required to fill back orders and current demand, while the amount of supply coming this way from outside sources is comparatively small. Prices remain as they were a week ago.

Fish Oils.—Of crude Menhaden there have been sales to the extent of about 1500 barrels, including No. 1 at 31¢ and No. 2 at 30¢. Those prices indicate a very firm market, but the Bleached and Pressed Oils are jobbing at old prices, or very close to present cost. In Sperm and Whale there has been little doing, and prices are wholly unchanged.

Miscellaneous.—Common Olive Oil has been rather quiet, with prices still leaning in buyers' favor, but showing no radical change. Cocoanut Oils, while rather quiet, remain steady. Mineral Oils are finding merely routine sale and the market is rather flat, with prices somewhat unsettled, more particularly for Black and Paraffine Oils.

Spirits Turpentine.—Statistics of receipts and stocks indicate a very good demand during the week, but individual purchases have been of strictly routine character and prices have varied but little. Quotations are now 30¢ for regular and 30½¢ for machine barrels.

The rate on coke from the Connellsville region to Buffalo, N. Y., which was formerly $2 25 per ton of 2000 pounds, has been reduced to $2 per net ton, the reduction going into effect on Monday, June 20.

Diamond Spring Broom Holder.

Slaymaker, Barry & Co., Lancaster, Pa., for whom Surpless, Dunn & Alder are agents, 97 Chambers street, New York, are just putting on the market the broom holder illustrated herewith. This holder consists of a wood block, as shown in Fig. 1, on which is secured a steel spring, so shaped and tempered as to readily receive the handle of a broom, holding it firmly and releasing it easily. The manner in which the holder grips the broom handle is shown in Fig. 2. The block is described as made of hard wood, highly burnished in ash finish, and has two holes bored in it through which to drive the screws or nails to fasten holder to the wall. The spring is referred to as of best selected steel, oil tempered, and so shaped as to hold equally well either the thinnest or thickest handles. It is mentioned that the spring is beautifully blued and very elastic. The holders are packed one dozen in a pasteboard box and one gross in a case.

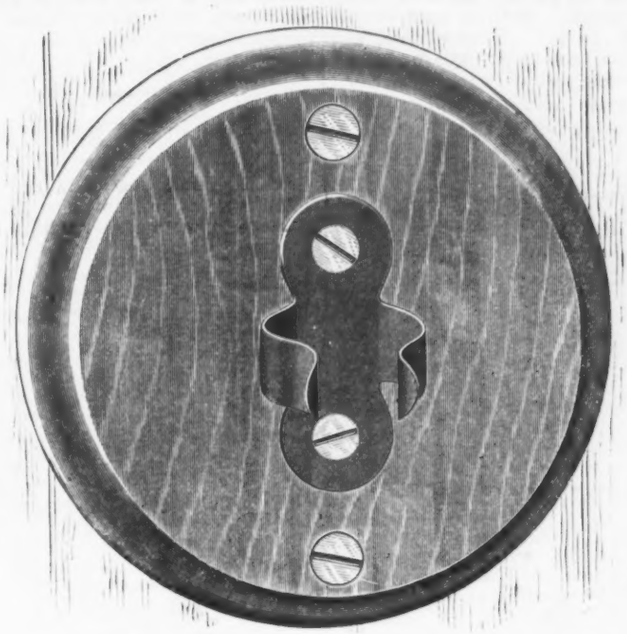


Fig. 1.—Diamond Spring Broom Holder.

Fig. 2.—The Holder in Use.

The S. S. & Co. Columbian Roasting and Baking Pans.

Sidney Shepard & Co., Buffalo, N. Y., are putting on the market the above article, which is represented in the accompanying illustration. These pans open at either end, and are described as made from cold rolled polished steel. The fastenings are made of cast iron, the upper part hollowed to rest on the edge of the pan, forming a hinge. The pans are alike at both ends, and in combination with the handles form, it is claimed, a simple, secure and durable lock. Reference is made to the wires under the pan as adding strength and durability and allowing free circulation of air underneath. The manufacturers make the point that in this pan the vapors arising from the meat are condensed and deposited again on its surface, thus retaining, it is stated, all the nutritive properties. The pans are offered in three sizes.

The S. S. & Co. Columbian Roasting and Baking Pans.

Boss Huskers.

The H. H. Perkins Mfg. Company, Kewanee, Ill., are putting on the market this season several new styles of corn huskers, in addition to their already large line. The accompanying illustrations show their new styles O and P. Style O is a combination husker with thumb and finger cots. The cots are described as made of the very best quality of yellow calf leather, carefully selected and finished. The wearing parts are protected by tin capped steel rivets, and also enforced by an additional thickness of leather. The cots are connected by a strap that passes through a brass loop riveted to the wristband, which gives it a free motion and prevents it binding or chafing the hand. With neat brass buckles the cots and wristband are easily and quickly adjusted to fit the hand. Style P is referred to as made of good, stiff steel and given a heavy coating of tin. It is shaped to fit the hand and is strapped with a good quality of yellow calf, furnished with a neat brass buckle by which it is quickly adjusted to the hand. This is a part of their Style O, but being detached, either can be used separately if desired. These goods are alluded to as furnished at as low prices as are in keeping with the quality.

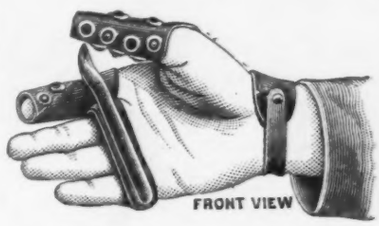


Fig. 1.—Boss Husker, Style O.

Fig. 2.—Boss Husker, Style P.

Pflueger's Combination Fish Cleaner and Fork.

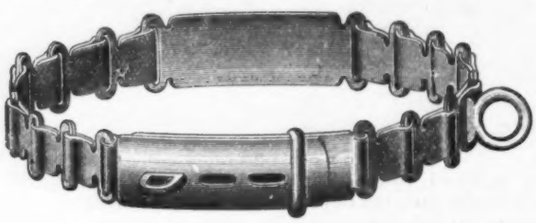
The Enterprise Mfg. Company, Akron, Ohio, are offering fishermen's accessories, as illustrated in Figs. 1 and 2. The cleaner, Fig. 1, is a steel blade attached to a cast iron handle; a side and end of the blade having teeth, while the opposite end is ground sharp, and the other side has a blunt edge. The point is made that the disagreeable work of cleaning fish is wholly obviated by the use of this device. The manufacturers claim that scales, fins, head and tail can be removed with the cleaner in half the time required by the usual methods. The fork, Fig. 2, is used for holding and moving the fish while cleaning in connection with the fish cleaner. Both the articles are represented nearly full size by the cuts.

Fig. 1.—Pflueger's Combination Fish Cleaner.

Fig. 2.—Pflueger's Combination Fish Fork.

Kelley's Dog Collar.

Kelley & Woolworth, Niagara Falls, N. Y., are offering dog collars, as illustrated herewith. The chain is composed of safety links, made from sheet steel and other metals in the same manner as the American chains, and presents a smooth surface inside. It is stated that on this account the collars when used without lining do not chafe the dog's neck. The collars are made of bright steel, steel blued, brass nickeled, aluminum, solid nickel and oreide. They are made in four sizes—½, ¾, 1 and 1½ inches wide, and from 9 to 25 inches long. The manufacturers claim that these are the only chain dog collars in the market. The collars are made in the same styles and sizes, lined with black, russet and orange leather; also with chamois.



Kelley's Dog Collar.

It would be difficult to imagine a more surprising metamorphosis than that by which the native timber on the Pennsylvania hills is converted, in seven hours, to a sheet of clear white paper ready for the press. The New York & Pennsylvania Company's mill at Johnsonburg in Western Pennsylvania is said to be the largest book paper making establishment in the world. It covers several acres of ground, and almost as many acres of machinery. Sixty cords of timber are thrust into the choppers and 90,000 pounds of paper are shipped from the yards every day.

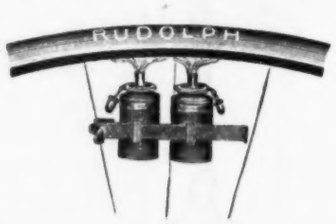
The Weller Seam Iron.

The Lightning Check Punch Company, Bridgeport, Conn., are introducing this article, as illustrated herewith. It is referred to as simple in construction, well made of good material, thoroughly practical, and so constructed as to readily open any seam and thoroughly press it. The manufacturers state that it does not touch any portion of the garment except that which forms the seam and that many articles are ruined by the pressure of the ordinary iron upon the fabric. The iron is made in four sizes, from 5½ to 15 pounds, and is designed for the use of tailors, dress and cloak makers and for family use.

The Weller Seam Iron.

The Rudolph Nickel Bicycle Tire Heater.

Hibbard, Spencer, Bartlett & Co., Chicago, are putting on the market this article, the use of which is illustrated herewith. This heater is the invention of T. W. Rudolph, who is connected with that house and is well known in connection with the bicycle business. The heater is described as nicely polished and nickeled, and the intensity of the heat produced by it is especially referred to. Its construction is such that the heat may be increased or diminished by raising or lowering its position, and it may be swung out of the way when applying cement or examining the tire. It is stated that it can be quickly taken apart, and is so compact as to be readily carried in the pocket. The low price at which it is sold is another point in regard to it to which special attention is called.

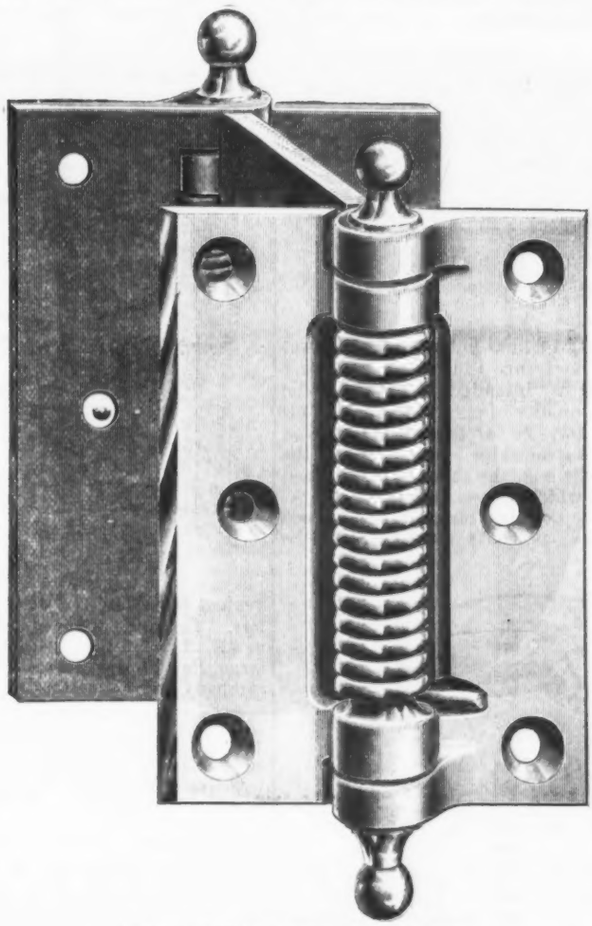


The Rudolph Nickel Bicycle Tire Heater.

There has been completed in Idaho a gigantic storage reservoir of 5,000,000,000 gallons capacity for use in the dry season, which has a dam 62 feet high.

Stearns' Double-Acting Spring Hinge.

E. C Stearns & Co., Syracuse, N. Y., are introducing this article, as illustrated herewith. The springs, it is stated, are made of a superior quality of steel wire, and are held in place in the leaves in such a manner as to insure against their becoming loose and preventing decrease in the tension. They are referred to as being exceedingly strong and as being of a plain and tasteful pattern. They are finished in Milan bronze, and are packed with and without false flap, with or without screws, in a slide-cover wooden box. The sizes in which they are made are 3½ x 1 and 3¾ x 1½ inches.



Stearns' Double-Acting Spring Hinge.

Scott's Pocket Outfit of Anglers' Repairs.

Dame, Stoddard & Kendall, Boston, Mass., have recently put on the market the outfit, as illustrated herewith. The tin box is richly finished in colors, and contains one bottle best shellac, one brush, one spool winding silk, one three-cornered file, one knife-edge file, one piece of wax, one spool heavy black silk thread, one package assorted needles, one box guides, ring tips, &c., one stick of ferrule cement, one oiler and a screw driver. The box is a small and compact one, not too large to be carried in the outside pocket of an angler's coat. Every fisherman knows the disappointment which attends the breaking of a rod while in use at a great distance from a convenient place for repairs. Possessing this useful equipment, it is stated that one can repair a rod on the spot and go on fishing.

Scott's Pocket Outfit of Anglers' Repairs.

Iron Curb and Tubing.

Kegler, Weinschenk & Ahlers, Belleville, Iowa, are manufacturers of an iron pump curb and also of an iron pump tubing, of which we present illustrations.

Fig. 1.—Ga'vanized Sheet-Iron Curb.

Fig. 2.—Galvanized Iron Tubing.

The curb is made of galvanized sheet iron and has two malleable iron rims which constitute the frame, as shown in Fig. 1. The lower rim is bored for screws by means of which the curbing is fastened to the platform. The upper rim supports the cap of the curb, and to this rim are also fastened the fixtures. These fixtures are fastened to the rim by small bolts and can be easily replaced when worn out. This curb is 10 pounds lighter than the ordinary wood curb, and it is claimed will not rot or rust or accumulate filth. It is made tapering from the top to prevent the formation of ice, and is made water tight so that there is no leakage, nor can rain water drain into it. The galvanized iron tubing, Fig. 2, is made with a straight seam and can be used with any make of curb. It weighs only ½ pound to the foot

and cannot become water soaked, as does wood tubing. A reservoir 3½ inches in diameter is placed at the top of the tubing and this allows a space between the bucket and the tubing. By this means no water is left above the frost line, rendering the pump anti-freezing. Any style of rubber bucket or chain can be used in this tubing. The reservoir tubing is made in lengths of from 5 to 9 feet.

The Moncrieff Gauge-Glass Cutter.

H. A. Rogers, 19 John street, New York, is offering the above gauge glass cutter, as illustrated in Fig. 1. It is a handy,

Fig. 1.—The Moncrieff Gauge-Glass Cutter.

serviceable tool made of steel, 6½ inches long. In use the cutter is inserted in the gauge glass, and the sharp edge pressed against the side of the tube until an even mark is made all round, Fig. 2. A specialty of Moncrieff's Scotch gauge glasses is made by the above firm, who are the sole agent for them in the United States and who keep a large stock, ranging from 10 to 72 inches in length, with

Fig. 2.—The Moncrieff Cutter in Operation.

external diameters of ½, ⅝, ¾, ⅞ and 1 inch. A peculiarity of these glasses is that they are so hard outside that a diamond will scarcely scratch them, and so soft inside that they may be cut with a piece of sharpened steel. We are assured that the glasses will stand with perfect safety a pressure of over 2000 pounds to the square inch, and that they will bear any variation of temperature to which it is possible to subject them in a steam boiler without being in the least affected.

Jubilee Combination Horns.

American Stamping Company, Brooklyn, N. Y., salesrooms 104 and 106 John street, New York, successors to Joseph

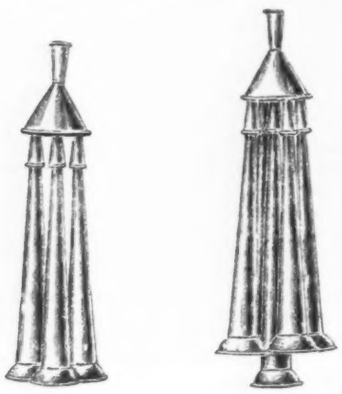


Fig. 1. *Fig. 2.*

Jubilee Combination Horns.

Scheider & Co., manufacturers of plain and decorated stamped and pieced ware, have just introduced a novelty called a Jubilee Combination Horn, as here illustrated. Figs. 1 and 2 represent a combination of three and five horns respectively, with a chamber at the top, through which they are supplied with air. These goods have been made especially for political campaign purposes, and the company suggest orders be placed early to insure having the goods when wanted, as a large demand is anticipated.

Hermetical Hardwood Cigar Box.

Theodore V. Smith, 82 John street, New York, dealer in stationers' hardware, cash boxes, &c., has put upon the market a novel contrivance illustrated in Figs. 1 and 2. It is intended to preserve the flavor and quality of cigars when the air is very dry, or at the seashore, or on yachts and steamships. Fig. 1 shows the inside of the box, the cover B being lined with felt, which closes over projection A, making the box, it is claimed, when closed and locked, perfectly air tight. In the cover is a perforated metal plate having sufficient space back of it for the insertion of material furnished for that purpose, which when dipped in water is designed to keep cigars moist, retaining the original flavor and shape, and is used when the air is dry. Fig. 2 shows the box closed. The boxes are fitted with good locks, having flat steel keys. Four sizes are made,

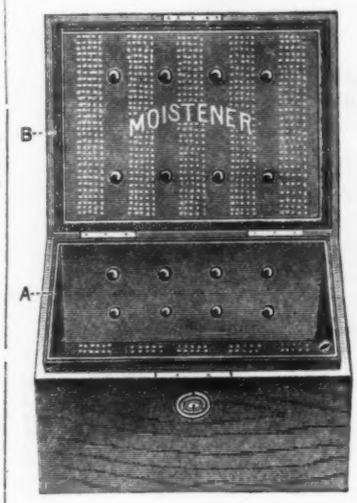


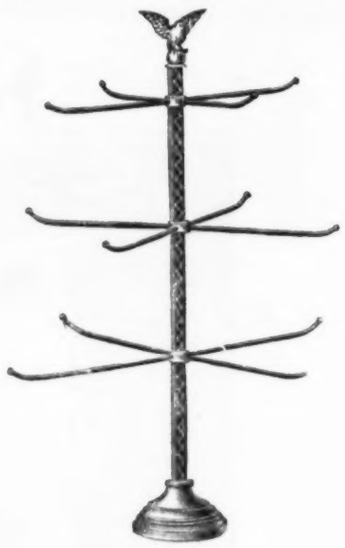
Fig. 1.—Cigar Box Open.

Fig. 2.—Cigar Box Closed.

to hold 50, 100, 200 and 500 cigars in the original boxes. The materials used are quartered oak and mahogany, polished or piano finish, zinc or silver lined, nickeled or burnished gold trimmings. Prices vary from $6 to $45 each, according to size, material and finish.

New Dog-Collar Stand.

The Chapman Mfg. Company, Meriden, Conn., are putting on the market a new style of dog-collar stand, as represented herewith. This stand is described as highly finished in nickel, gold or silver



New Dog Collar Stand.

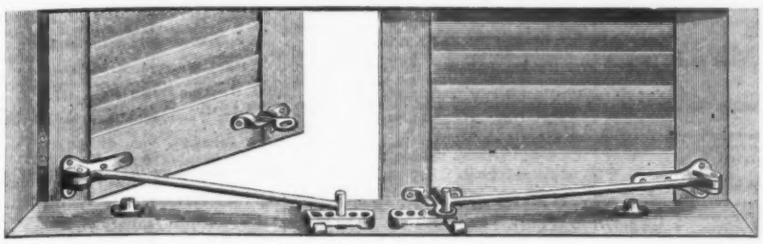
plate, and is referred to as making a convenient and attractive display of dog collars. The price of the stand is mentioned as $5. It is an interesting addition to the large line of dog furnishings which this company are manufacturing.

Solar Water Heater.

Clarence M. Kemp, Baltimore, Md., issues a circular exclusively devoted to the Climax Solar Water Heater, of his manufacture. This device, which was illustrated some time ago in our columns, is an apparatus for utilizing the sun's rays in the warming of water for bathing and other purposes. In the folding circular at hand a very full description is given of the apparatus and numerous illustrations are presented. Cuts show the heater ready for connecting with the pipes, and sectional views are presented illustrating the position of the heater on the roof, together with the pipe connections by which delivery is made into the bathtubs and sinks. Also its application to the side wall of a house is shown by means of a cut. It is said that with the use of this heater the range can be dispensed with in the summer, and the cooking done on a gas stove. The various advantages of the apparatus are referred to at length in the circular and full table of sizes, weights and capacities given.

The Walling Blind Fastener.

The Walling Patent Shutter Bower Company, Frederick, Md., are putting on the market the blind fastener represented in the illustration herewith given. The rod and bracket of this fastener are made of malleable iron, the rod having a bend so as to prevent the blind from being notched when entirely open. The bracket has an extension crossing the stile and bottom rail of the blind, thus, it is claimed, strengthening the blind at its weakest point. One of the special features of this fastener is referred to as the self lock, by which, it is stated, the blind may be closed and locked from the outside, and in connection with the crosshead on the rod makes it a double lock. The manufacturers mention that the sill plates and rods are so constructed as to make the fastener interchangeable, so that it is only necessary for dealers to carry a small stock. They also mention that the pin in this fastener is wrought, making this part, it is claimed, stronger and more durable than where the connection between bracket and rod is made with a cast pin.



The Walling Blind Fastener.

The Household Button-Hole Cutter.

The Alford & Berkele Company, 77 Chambers street, New York, are introducing the button hole cutter as illustrated herewith. The cutter or blade is of the best tempered steel, and is attached to the upper jaw by a round head screw, the cutter being readily replaced in case of breakage at a small cost. The eyelet punch and the blade both cut against the brass gauge plate attached by a rivet to the lower jaw. The eyelet hole is first cut with the punch, which is fastened by a thumb screw, passing through the blade and jaw, and the punch is then turned up out of the way of the cutting edge of the blade, so that the slit for the button hole may be cut. The brass gauge, as shown in the cut, is at a position to allow a button-hole 1¼ inches long to be cut, but may be swung around so as to cut any length hole from 1¼ down to ¼ inch. Underneath the gauge, at the rear, are six holes, which go but part way through, into which holes a pin projecting from the jaw fits and holds the gauge in place, as is required for different length button holes. A spiral spring between the handles throws the jaws apart. The cutter is 6½ inches long, weighing 7 ounces, and is full nickel plated.

The Household Button-Hole Cutter.

The Magnetic Fly Trap.

The Magnetic Fly Trap Company, 482 Broome street, New York, have recently patented and are now introducing a new fly trap, as shown in Figs. 1 and 2. The apparatus consists of a base and bottom plate, a can, with a cap, containing a mixture (which they say is harmless to man or child), a long rod and plate (or scraper), with which to remove the flies when the rod is full. The article is put up in portable shape, knocked down, and directions are sent with each trap, explaining the method of putting together and how to renew the mixture. Fig. 1 shows the article ready for use. Fig. 2, after the flies or insects have been caught. To clean the rod, as shown in Fig. 2, push the plate slowly upward, which removes the flies. To replenish the material on the rod, push the box up and down once and it is again in order. They recommend it for private houses, butcher and barber shops, restaurants, saloons, show windows, offices, stores, &c.

Fig. 1.—Magnetic Fly Trap Ready for Use.

Fig 2.—Showing Method of Removing Flies.

CONTENTS.

PAGE.

The Niles Boring and Turning Mill. Ill. ...1211
The Recent Development and Progress of Gun Manufacturing in the United States. —II... 1212
The Smith Exhaust Tumbling Barrel. Ill...1213
The Iron and Steel Institute... 1213
World's Fair Notes..... 1214
Upright Drill. Illustrated..... 1215
The Position of Spelter..... 1216
The Vanderbilt Bronze Doors... 1219
The Webster Feed-Water Heater. Illus. ..1217
Annealing Tool Steel..... 1217
The Whiteside Pulley Covering Process. ...1218
Wage Conferences at Pittsburgh..... ..1218
Lake Trade with the Seaboard. 1219
San Francisco News... 1219
The Wilson Dumping Apparatus. Illus 1220
Butte Copper Mines.—I... 1221
New Publications..... 1223
The Microscopic Structure of Iron and Steel. Illustrated 1224
The Week 1225

Editorials:
The Agricultural Outlook..... 1227
The Wages Question..... 1227
When to Discard a Machine Tool.. 1227

Correspondence..... 1228
The Pittsburgh Manufacturers' Scale.....1229
Obituary.. 1230
Personal..... 1231
Washington News..... 1231
Freights on Southern Pig Iron.....1231

Manufacturing:
Iron and Steel..... 1232
Machinery.....1232
Hardware.... 1232
Miscellaneous.....1233

Trade Publications.... 1233
Current Technical Literature 1233

Trade Report:
Philadelphia.....1234
Chicago.....1235
Pittsburgh..... 1236
Cleveland..... 1237
St. Louis..... 1237
Detroit... 1238
Cincinnati..... 1238
Louisville... 1238
New York..... 1238
Metal Market 1238
Financial.....1239
Coal Market..... 1240
British Iron and Metal Markets..... 1240

Hardware:
Condition of Trade..... 1241
Notes on Prices..... 1241
Anti-Rust..... 1241
Consolidation of Cutlery Interests..... ..1242
The Electrical Supply Co..... .1242
W. B. Belknap & Co..... 1242
Joseph F. McCoy & Co..... 1242
Australian and New Zealand Freights.....1242
Ideas for Hardware Merchants. Illus.. ..1243
Henry Disston & Son's Factory.... 1243
Australian Notes 1244
Trade Items..... ... .1244
Price-Lists, Circulars, &c.... 1244
It is Reported—. 1245
Exports.....1245
Paints and Colors..... 1246

Diamond Spring Broom Holder. Illus..... 1247
The S. S. & Co. Columbian Roasting and Baking Pans. Illustrated..... 1247
Boss Huskers. Illustrated..... . .. .1247
Pflueger's Combination Fish Cleaner and Fork. Illustrated..... 1248
Kelley's Dog Collar. Illustrated..... 1248
The Weller Seam Iron. Illustrated.....1248
The Rudolph Nickel Bicycle Tire Heater. Il.1248
Stearn's Double-Acting Spring Hinge. Ill..1249
Scott's Pocket Outfit of Anglers' Repairs. Il.1249
Iron Curb and Tubing. Illustrated.... 1249
The Moncrieff Gauge-Glass Cutter. Illus.. 1250
Jubilee Combination Horns. Illustrated ...1250
Hermetical Hardwood Cigar Box. Illus....1250
New Dog-Collar Stand. Illustrated ... .1250
Solar Water Heater..... 1250
The Walling Blind Fastener. Illustrated ...1251
The Household Button-Hole Cutter. Illus..1251
The Magnetic Fly Trap. Illustrated.. .. .1251
Current Hardware Prices..... 1252
Current Metal Prices..... .. . 1258

CURRENT HARDWARE PRICES.

JUNE 22, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00....50&10&2%
North's .....list net @10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's .....11@11½¢
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horseshoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Chenev Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co
Rockford Bit Company.
} 70&10@70 &10&5%
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip 60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 33⅓ quarters, No. 5, 35; No. 30, $3.50.20%
Lewis' Patent Single Twist 45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....20%
Pugh's Jenning's Pattern.....30%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—
Morse Twist Drills .....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood .....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $32.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common .....₩ gross $2.75@$3.25
Diamond .....₩ doz $1.25....4 &10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass' .....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives
French, Swift & Co.
Douglass'
} 33⅓ @ 33⅓&10%
Bonney's Adjustable, ₩ doz $48....40&10%
Stearns' .....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's .....25&25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's .....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—
Awls, Sewing, Common .₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@ 8¢
Awls, Shouldered Brad..₩ gr $1.30@1 40
Awls, Handled Brad...₩ gr.$2.5¢ @$3.00
Awls, Handled Scratch .₩ gr $4.0¢@4 50
Awls, Socket Scratch..₩ doz. $1.10@$1 20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—
Plain. Beveled.
First quality, best brands.$7.00 @ $7.50
First qual., other brands { 6.62½ @ 6.75
Second quality..... 6.00 6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1...3¼¢@3½¢, No. 2, 5¢@6¢
Nos. 7 to 14.....6¢&10%
Nos. 15 to 18.....47½% } 3% cash
Nos. 19 to 22 .....70%
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self-Oiling.....
33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances 40%
No. 2000 20 30
Chatillon, ₩ dos....$0.80 0.95 1.75 net
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '83...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—
Egg—
Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral .....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co .....₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %

Bells—
Cow—
Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham .....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Door—
Gong, Abbe's .....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks' .....50&10&2%
Crank Cone's.....10%
Crank, Connel's .....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned .....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's 20%
Hand—
Light Brass.....70&10¢
Extra Heavy.....70%
White 70%
Silver Chime.....33⅓&10%
Globe Cone's Patent) .....25&10@35%
Miscellaneous—
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—
Blacksmiths'..... 60&10@60&10&5%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....70@10@75&5%
Standard.....70@5@70&10%
Extra .....60&10@60&10&5%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond..... .....50%
N.Y B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.
Wood Lined Crystal.....50%
Oxidized.....45%
Embossed 50%
Paper Lined Zinc..... .....55%
Crystal.....55%
Embossed.....55%
New Tacoma.....55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&5&2%
Genuine Eagle, Norway, list Oct., '84... 80@80&10%
Phila. pattern, list Oct. 7,'84..75@75&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890..... 80@80&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's 60&10%
Wr't Shutter, Brass Knob, ..40&10%
Wr't Shutter, Sargent's l st.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'r ..... 25&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire. list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.
Common and Ring.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....50&10@30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔.....2½¢

Braces.
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net .....$1.13 to $1.35¢
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.1
Barber's,
Nos. 10 to 16.....50@50&10%
Nos. 30 to 33.....50@50&10%
Nos. 40 to 63.....50&10@50&10&5%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 31 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....50&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—
Shelf, plain.
Regular list.....65@70%
Sargent's list.....65⅔@66⅔&10%
Shelf, fancy.
Sargen's list.....66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—
Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co .....65&10%
Morgan Odorless.....₩ doz $12, 33⅓%

Buckets, Well.
Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad.....₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass.....80@80&10%
Cast Brass, Tiebout's'.....60%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned..
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75@75 &5%
Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c .....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
} 75@75 &5%
Bronzed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Tee—
Gautier, One Prong, Blunt.....5½¢@6¢
Burke's, One Prong, Blunt.....5½¢@6¢
Burke's, Two Prong, Blunt.....7½¢@8¢
Burke's, One Prong, Sharp.....6½¢@7¢

Can Openers—See Openers Can

Caps—
Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37½
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
A. B. Genuine Imported.....45¢
Eley's E. B.....55¢ @ 58¢
Eley's D Waterproof, Central Fire...$1.80

Primers—
Berdan Primers, $1.00.....2½
B. L. Caps (for Sturtevant Shells) $1.00.....2½
All other Primers, $1.20.....2½

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File.....33⅓

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2½
B. B. Caps, Con. Ball, Swgd., $2.00.....2½

Casters—
Bed..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Martin's Patent (Phoenix).....45&10@60%
Parson's Anti-friction.....70%
Parson's Truck.....60%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@ 60&10%
American Coil, in cask lots.
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
$7.50 5.45 4.45 3.80 3.65 3.50 3.40 3.35
Less than cask lots, add ½¢@1¢ ₩ ℔.
German Coil, list Oct. 6, 1890...60@60&5%
German Halter Chain, list Oct. 6, 1890 60@60&5%
Covert Halter.....60&2%
Covert Traces.....35@35
Covert Heel Chain .....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—
White, case lots.₩ gr 50¢; small lots 55 @55¢
Red, case lots...₩ gr 67¢; small lots 77 @75¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby.
Mix.
} ..75 @ 75&10 %
Ohio Tool Co.
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels. ₩ ℔ .....15@10%

Chucks.
Beach Pat.....each, $3.00.....20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks.....40%
Drill Chucks.....10%
Union Mfg. Co.,
Victor.....$3.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.
Tinn Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal..$4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.60; 10 gal., $2.75; 15 gal., 3.00 20 gal.. 3 25

Clamps—
B. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40@10@40@10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.
Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—
Norway, Axle, ¼ & 5-16.....55&5&2%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 6¢
Baker Axle Clips.....

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Chapman Mfg. Company.....50&10@60%
Mount'ord Fancy Goods Co.....40&10@50%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Combs, Curry.
Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
American Curry Comb Co.....Net prices

Compasses, Dividers, &c.—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair, ₩ lb, 24¢@25¢
Common Russia Sash.....₩ lb, 12½@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb, 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lake—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring, Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White, ₩ lb, 28¢.10%
Wire Picture.
Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&5&2@50&10&2%

Crayons.
White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr. $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—
Meat.
Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
.....$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos.....100 150
.....$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.....11 12 13
.....$37.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
terprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $12
at American Meat Cutter.....30%
Nos..... 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $2.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos.....1 2 3
.....$22.00 $30.00 $40.00
Home No. 1.....₩ doz $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
.....$50 $75 $80 $225.....20@25%
Beef Shavers (Enterprise).....30&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz.....$66.00
Tobacco.
Champion.....20&10@30%
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's, ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—
Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. $18.00
Kohler' New Champion.....₩ doz. $9.00
Schnieder.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger.....₩ doz $15 00
Imperial.....₩ doz $7.50
Shimer's Hollow Handle, ₩ doz, $24..50%

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.
Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Cleveland.....50&10&5%
Diamond, W. & B.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%
Morse.....60&10&5%
New Process.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....65&10%
No. 86.....70&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal. 50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....35&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz, 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....35&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs. ₩ lb.....	4½¢	5 ¢	2½¢
½ kegs. ₩ lb...4½¢		5½¢	2¾¢
¼ kegs. ₩ lb...5 ¢		5½¢	3 ¢
10-lb cans, 10 in case.....6 ¢		6½¢	5 ¢
10-lb cans, less than 10.....10		10 ¢	

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....20%

Expanded Metal.
List No. 5.
Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $36.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—
Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Arcade.....60&10@60&10%
Eagle.....60&10&5@60&10&10%
Other makers, best brands.60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chesea orse Rasps, Hand Cut...50&10%
Arcade orse Rasps.....60&10%
Imported—
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.
Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—
Hay, Manure, &c., Asso. List...70 &70&5%
Hay, Manure, &c., Phila. List.60@60&10%
Plated, see Spoons.

Frames—
Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%
Screen, Window and Door—
Porter's Pat. Window and Door Frame.....33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—
White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.
Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. Gem, copper reservoir 8.50
Fuse—Dis. 12½%. ₩ 1000 ft.
Common Hemp Fuse, for dry ground..$3.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.35
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....30@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....50&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch.....25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Horse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&15

Gimlets—
Nail and Spike.....50&10&5%
Eureka Gimlets.....40&10%
Diamond Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%
Dodd's Liquid Glue.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $5.50
Dixon's Everlasting, in bxs...₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—
Small, at factory.....₩ ton $7.50@8.00
Family, regular list.....60%
Family, Cleveland Stone Co.....30 %

Grindstone Fixtures—See Fixtures Grindstone.

Gun Powder—See Powder.

Hack Saws—See Saws.

Hafts, Awl.
Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short, $1.00 ₩ doz.....10&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00...45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.
Covert's, Rope, Jute.....60&10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in, Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
E. Covert Mfg. Co.'s Halters.....33⅓%
E. Covert Mfg. Co.'s Horse and Cattle Ties.....33⅓%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co. } 50@50&10%
Verree.....40&10@—%
C. Hammond & Son.....
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting.50@5%
Hartford, Nail Hammers.....40@20%
Hartford, Machinists, &c...50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobler, new list.....25&10
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 lb and under.....₩ lb 40¢
3 to 5 lb.....₩ lb 35¢ } 70@70&10%
Over 5 lb.....₩ lb 30¢
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods.

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pr., 28¢; No 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversable, 18¢.
Champion.....18¢
Iron, Wrought or Cast—
Door or Thumb.
Nos..... 0 1 2 3 4
Per doz....$0.90 1.00 1.10 1.35 1.50
.....60&10&
Boggin's Latches.....₩ doz 30@35¢
Bronze Iron Drop Latches..₩ doz 70¢ n
Jap'd Store Door Handles—Nuts, $1.63 ·
Plate, $1.10; no Plate, $0.83.....ne
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%
Wood—
Saw and Plane.....40&10@40&10&5
Hammer, Hatchet, Axe, &c...40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 5.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
J. B. Smith & Co.'s Pat File.....50
File, assorted.....₩ gr 2 75
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&1
Pat. Auger, Douglass.....₩ set $1.35
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....60&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
C. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Ulimax Anti-Friction.....55%
Ulimax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....40&10@60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ dos pr. 4 in. $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction 20&10@20&10&10%
Stearns' Challenge....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50@5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%
Pendulum, Payson's.....40%
Moody.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co. Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's.... 40 & 10 @ 50&5 %
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ dos $4.40, 60%
E. E.....₩ dos $7.00, 55%
N. E. Reversible.....₩ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ dos $5.00, 55&10%
Automatic.....₩ dos $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1886.....2 %
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent.....40%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Stearn's.....50&10%
Samson, ₩ gross.....$14.00

Extra 5@10 % often given.

Wrought Iron Hinges.

List February 14, 1891.
Strap and T.....50&10@5 &10&5%
Corrugated Strap & T.....50@50&10%
Screw Hook and Strap..... 6 to 12 in., ₩ lb. 4¢; 14 to 20 in., ₩ lb. 3½¢; 22 to 36 in., ₩ lb. 3¢
Screw Hook and Eye.... ⅜ in., ₩ lb 7½¢; ½ in., ₩ lb 5½¢; ⅝ in., ₩ lb 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "8, 10 & 12 in., ₩ lb.....5¢
"Providence" over 12 in., ₩ lb.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 70@70&
Am. Axe and Tool Co., S. & O. Pat. } 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ dos $18.....60%

Bit.

Extension,
Barber's, ₩ dos $15.00.....40@40&10%
Ives, ₩ dos $20.00.....60&5@60&10%
Diagonal.....₩ dos $24.00, 40%
Angular.....₩ dos $24.00, 40&5%

File and Tool.

Bals Pat.....₩ dos $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list.....
Clothes Line, Reading list. 60@10&10%
60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ dos $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10%
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat..45@45&25%
Wire Coat and Hat, Standard.60@90&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&80&10%
Atlas, Coat and Hat.....60@60&10%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00: No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition..... 75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....40&10@60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 lb, $2.30@$2.40
Self-Heating.....₩ dos $9.00 net
Self-Heating, Tailors'....₩ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad irons, ₩ lb.....3 @3½¢
Combined Fluter and Sad Iron, ₩ dos, $15.00.....15%
Fox Reversible, Self-Fluter ₩ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....9¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ lb 19 @ 21¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby, P. S. & W, Mix, New Haven.....75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....35@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ dos $11.00@$11.50
Heath's.....₩ dos $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ dos. $7.00 @ $8.00

Mincing.

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $15.....net
Lothrop's.....20&10%
Smith's, ₩ dos, Single, $2.00: Double, $3 40@45%

Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ dos $3.00 25%
Buffalo Double Adj'table, ₩ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....₩ dos $3.50
O. K., with Guard.....₩ doz 3.75
Sid Lift, with Guard.....₩ doz $4.00
Squa e Lift, with Guard.....₩ doz $4.25
Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, G ard, ₩ doz $ 50
Cop. Plated Sq. Lifts, Guard..₩ doz $5.45

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular..... ₩ dos $3.60
3-inch Bull's-eye Police regular..... ₩ dos $3.90
2¾-inch Bull's-eye Police flash light ..... ₩ dos $4.00
3-inch Bull's-eye Police flash light..... ₩ dos $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason. Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....25%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&.%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4 $2.00; No. 4½, $2.50
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 12 10 8
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided. White or Drab Cotton..₩ dos $7.50, 20%

Links, Open.

Terry's—per gro.:

Nos.....	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Delta, Nos. 36 to 39.....40%
Delta, Nos. 51 to 63.....40&10%
Delta, Nos. 86 to 96.....30%
Stoddard Lock Co.....80&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓&2%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889..... } 65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb 9 '88.....
B anford Lock Works.....
Brittan, Granam & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....40&10%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Sheparuson or U. S.....35%
Seed's N. Y. Hasp Lock.....35%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deits.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....35%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian, Nos 110, 120, 130 and 140.....90&10%
Other Nos.....85%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....30%
Slaymaker Barry & Co.
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....60%&10@65%&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886....70%
Payson's Perfect.....60&10%
Huguniin's Sash Balances.....25&5&2%
Huguniin's New Sash Locks.....35&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No 105, ₩ gr, $10.....40%
Davis, Bronse, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ dos, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat.		5.50	6.75	40&10&10%
Jennings		5.50	6.75	45@45&10%
Other Machines		2.35	2.75	
Phillips' Patent with Augers		7.00	7.50	
Miller's Falls		7.50		35%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ dos $12, 35%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ dos 15 90.....40%
Sheparo Hand Fluter, No. 110 ₩ dos $11.00.....40%
Shepard Hand Fluter, No. 95 ₩ dos $8.00.....40%
Clark's Hand Fluter, ₩ dos $15.00.....35%
Combined Fluter and Sad Iron, ₩ dos $15.00.....30%
Buffalo.....₩ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's.....35%
Sure Grip Steel Tackle Blocks.....35%

Washing—

Anthony Wayne, ₩ dos No. 1, $51 No. 2, $45, No. 3, $42.
Western Star ₩ dos No. 2, $45; No. $48
Weisel.....₩ dos $54.00
Fair and Square.....₩ dos $42.00

Mallets.
Hickory.....30&10@30&10&10%
Lignumvitæ.....30&10@30&10&10%
E. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₩ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Philadelphia.....60&10%
Pennsylvania and Continental.....60%
New Model and Excelsior.....60@60&10%
Other Machines.....60&10&10@75%

Muzzles—
Safety.....₩ doz, $3.00, 25%

Nails,
Cut and Wire. See Trade Report.
Wire Nails, Papered
Association list, Apr. 11, '92 80&10&10%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$1.95 @ $2.00

Horse—

	Nos. 6	7	8	9	10	
American	8¾	8¾	8¾	8¾	8¾	net
Ausable	.28	26	26	24	23	40&ba...
Clinton, Fin.	.19	17	16	15	14	30&10%
Essex	.28	26	25	24	23	40&10&5&2%
Lyra	.19	17	16	15	14	40&5%
Snowden	19	17	16	15	14	40&5%
Vulcan	.23	21	20	19	18	25%
Northwest'n	.26	25	23	21	20	25@25&5%
A. C.	.25	23	22	21	21	25&10@33⅓&2½%
C. B.-K.	.25	23	22	21	21	25&10@33⅓&2½%
Maud S.	.25	23	22	21	21	40&10&5%
Champlain	.28	26	25	24	23	40&5&2%
Saranac	.23	21	20	19	18	40&5%
Champion	.25	23	22	21	20	10&10&10%
Capewell	.19	18	17	16	16	10%
Anchor	.23	21	20	19	18	35%
Western	.23	21	20	19	18	50%
Empire Bronzed						14 ₩ ₺.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Wiles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.35¢	5.95¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ₺, add 1-10¢ ₩ ₺, net; in packages less than 100 ₺, add ¼¢ ₩ ₺, net.

Oakum—
Best or Government.. ₩ ₺ 6¼@7¼¢
U. S. Navy.....₩ ₺ 5¾@6¢
Navy.....₩ ₺ 5¢@5½¢

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co.....₩ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4 French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50. 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50 ..40%
World's Best, ₩ gross, No. 1, $13.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....25&5%
Domestic, ₩ doz $2.50.....45%
Champion ₩ doz $2.00.....50%

Packing, Steam—
Rubber—
Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard. ₩ ₺ 80¢.....25@25&5%

Miscellaneous—
American Packing.....10¢@11¢ ₩ ₺
Russia Packing.....14¢ ₩ ₺
Italian Packing.....13¢@14¢ ₩ ₺
Cotton Packing.....15¢@17¢ ₩ ₺
Jute.....7¢@8¢ ₩ ₺

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75	
Helwig's.	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt.....₩ doz $5.40
Stable and Milk, 14 qt.....₩ doz $6.00
Fire Pails, deep.....₩ doz $5.40
" " round bottom.....₩ doz $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.
Dripping.
Small sizes.....₩ ₺ 6¼¢
Large sizes.....₩ ₺ 5½¢
Silver & Co. (Covered).....40%

Fry—
Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%

Dust—
Steel Edge, No. 1.....₩ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.25
Eureka, 1883.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State..₩ doz 27.00 @ 3.00
Little Star.....₩ doz 4.00
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 4.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
72.....₩ doz 4.25
78.....₩ doz. 7.00

Potato—
White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₩ gro $5.25
Dixon's Lead.....₩ gro $4.50
Dixon's Lumber.....₩ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's...$17 and $18.....60&10%
Peck, Stow & W Co... 50&10@50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under. Plain.....67½@68&10%
1¼ and under, Galvanized.50&5@5 &1%
1½ and over. Plain.....70&5@70&1%
1½ and over. Galvanized..60&2@60&10%
Boiler Tubes.
Sizes up to 2½ in. inclusive...57½@60%
Sizes 3 in. and larger.....60@55%
Casing.....55%
Inserted Joints Casing.....50%
Steel Boiler Tubes.....30%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.).. 50&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steer's Iron Planes.....35@35&10%
Merrien Bal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....20&10@30&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros.....30%
Auburn "Thistle."
Ohio.....30&10%
Sandusky.
S. & J. White.....25%
Stanley R. & L. Co.....50&10%

Plates.
Fallon.....₩ ₺ 6¢@6½¢

Pliers and Nippers.
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....35%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00.....50%
Cronk's Button Pattern.....50&10&10%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—
Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₩ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₩ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₩ doz $6.00
Bishop's O. K.....₩ doz $5.25
Bishop's Pioneer.....₩ doz $3.75
Bishop's American.....₩ doz $2.75
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Boiling.....₩ doz $4.00

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $35.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₩ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₩ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₩ gro $6.00, 10%
Gem.....₩ gro $4.50, 10%
Gold Medal.....₩ gro $6.00, 25%
Mirror.....₩ pro $6.00, —%
Lustro.....₩ gro $4.75
Ruby.....₩ gro $3.75
Rising Sun, 5 gro lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ₺ 8¢
Boynton's Noon Day, ₩ gro.....13.00
Parlor Pride Stove Enamel..₩ gro
Yates' Liquid, 2 3 5 10 gal....
₩ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₺ cans, ₩ ₺ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish..₩ gro $9.00
Bonnell's Paste Stove Polish..₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ₺ cans.....12½¢
Black Jack Water Paste, 5 and 10 ₺ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gross, $7.20
Crown Paste, in 5 and 10 ₺ pails ₩ ₺ 12¢
Black Flag.....₩ gross, $7.20
Black Flag, 5 and 10 ₺ pails, ...₩ ₺, 12¢
Black Flag, liquid, in bottles. ₩ gro. $8.00
Diamond Rock Nickel Cleaner..₩ gro $10.20

Poppers, Corn—
Round or Square, 1 qt..₩ gr $10.00@10.50
Round or Square, 1½ qt..₩ gr $15@15.50
Round or Square, 2 qt..₩ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howes's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder.
In Canisters—
Fine sporting, 1 ₺ each.....$0.90
Duck, 1 ₺ each.....60
Duck, ½ ₺ each.....40
Rifle, 1 ₺ each.....30
Rifle, ½ ₺ each.....18
In Kegs—
Rifle, 25-₺ kegs.....$5.50
Rifle, 12½-₺ kegs.....3.00
Rifle, 6-₺ kegs.....1.65
Duck, 12½-₺ kegs.....5.75
Duck, 6¼-₺ kegs.....3.00
Trap, 25-₺ kegs.....6.50
Trap, 12½-₺ kegs.....3.50
Trap, 6¼-₺ kegs.....1.90

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₩ doz $18.00, 33⅓%
Curtis Hammer.....₩ doz $6.00
Giant, No. 1.....₩ doz. $13.00, 10%
Giant, No. 2.....₩ doz, $15.00, 10%
Pelican.....₩ doz, $9.00, 25%
Eclipse.....each $2.00 net
Economy.....₩ doz $6.00

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60¾&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....60&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....30%
Hay Fork, "P" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....30%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₩ doz $13.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₩ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₩ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners', P. S. & W. Co., ₩ doz $1.44..55%
Tinners' Hollow Punches P. S. & W. Co. 30&2%
Rice Hand 2 inches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door. Wr't Brass, ₩ ₺ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₩ ft. 7¢
Sliding Door Iron, Painted, ₩ foot 4¢, 40%
Barn Door Light Iron.

	½	¾	⅞
Per 100 feet	$2.00	2.50	3.10, 10%

R. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 set	$2.15	2.70	3.25 net

Terry's Steel Rail, ₩ foot.....4½¢
Victor Track Rail, 7¢ ₩ foot.....50&5%
Carrier, double braced, Steel Rail, ₩ foot.....4@4½¢
Moore's Wrought Iron.....25%
Moody Steel Rail.....45%

Range—
Cast Steel, Association goods...60%@70%
Cast Steel, outside g'ds. 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....₩ doz $4.90
Canton Lawn Rake.....₩ doz $3.75
Favorite Lawn Rake.....₩ doz $4.40
Ft. Madison Prize Bow Brace and Peerless.....60%
Fort Madison Steel Tooth Lawn Rake, $6.00.....35%

Razors—
J. R. Torrey Razor Co.....30%
Wostenholme and Butcher, $10 to £..10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₩ doz $15.60
Electric Cutlery Co.....Net

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz @$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@1.25
Electric Hog Rings ...₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ oz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....
Thompson Mfg. Co.'s Lawn Rollers..30%

Rope.
Manila, 7-16 in. diam. and larger ₩ ₺ 12½¢
Manila.....⅜ in. ₩ ₺ 12½¢
Manila.....¼ and 5-16 in. ₩ ₺ 13½¢
Manila Tarred Rope.....₩ ₺ 11½¢
Manila, Hay Rope.....₩ ₺ 12½¢
Sisal.....7-16 inch and larger ₩ ₺ 10½¢
Sisal.....⅜ in. ₩ ₺ 10½¢
Sisal.....¼ and 5-16 in. ₩ ₺ 11½¢
Sisal, Hay Rope.....₩ ₺ 10½¢
Sisal, Tarred Rope.....₩ ₺ 9½¢
Sisal, Medium Lath Yarn.....₩ ₺ 9½¢
New Zealand...1-3 in. & larger ₩ ₺ 8½¢
New Zealand.....⅜ inch, ₩ ₺ 9½¢
New Zealand, ¼ and 5-16 inch, ₩ ₺ 9½¢
New Zealand, Hay Rope.....₩ ₺ 8½¢
New Zealand, Tarred Rope....₩ ₺ 8½¢
Note.—Manufacturers' prices on above 1¢ ₩ ₺ less, f.o.b. factory—less 1½% for cash
Cotton Rope.....₩ ₺ 13½@16¢
Jute Rope.....₩ ₺ 6½@7¢
Wire—
List February, 1892.
A 1 kinds.....45%

Rules—
Boxwood.....80&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular.....45@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand.....30@20&5%
Woodrough & McFarlin.
Hand, Panel and Rip.....25@25&5%
Narrow Champion Cross Cuts with Handles, ₩ foot.....18@30¢
Champion Thin Back Cross Cuts, ₩ foot.....36@33¢
Champion Extra Thin Back Cross Cuts, ₩ foot.....29@31¢
One Man Champion Cross Cuts, ₩ foot.....37@40
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....@3.25%
Narrow Champion Cross Cuts with Handles, ₩ foot.....18@30¢
Champion Thin Back Cross Cuts, ₩ foot.....36@33¢
Champion Extra Thin Back Cross Cuts, ₩ foot.....29@31¢
One Man Champion Cross Cuts, ₩ ft.. 37@

Atkins' Circular Shingle & Heading..50%
Atkins' Silver Steel Diamond X Cuts
₩ foot 70¢
Atkins' Special Steel Dexter X Cuts
₩ foot 50¢
Atkins' Special Steel Diamond X Cuts
₩ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ₩ foot 30¢
Atkins' Hollow Back X Cuts. ₩ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles.
₩ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip....25@25&5%
Peace Cross Cuts.....45@45&5%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts.....45@45&5%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co., Hand, Panel and Rip.....25@25&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.
Saw Sets—See Sets, Saw.
Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality.
₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Richie Bros.' Platform.....10%
Scale Beams—See Beams, Scale
Scissors, Fluting.....45%
Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $4.50 .....30&10%
Box, 1 Handle.....₩ doz $4.00. 10%
Box, 2 Handle.....₩ doz $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%
Screen Window and Door Frames—See Frames.
Screw Drivers—See Drivers, Screw.
Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood .....25&10@25&10&5%
Hand, Grand Rapids, list.....5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & F. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—

List January 1, 1891.

Flat Head Iron.....70 %
Round Head Iron.....65 %
Flat Head Brass.....70 %
Round Head Brass.....65 %
Flat Head Bronze.....70 %
Round Head Bronze.....65 %
Rogers' Drive Screws.....82½%

Extra 10 @ 10&10% of. ten given.

Scroll Saws—See Saws, Scroll.
Scythes.
Grain.....40&5@40&10%
Grass.....40&10@60%
Scythe Snaths—See Snaths, Scythe
Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 .....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. .....25@25&10%
Miller's Falls Adj. Tool Hdls.. Nos. 1, $12. 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 .....50&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50. .70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr.,$12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, 5.25.....45@50%
Common Lever .....₩ doz $2.00, 45@50%
Morrill's No. 1, $12 00 ..... 40@40&5%
No 11, $15.00.... 40&10@40&2 %
Nos. 9 and 4, $18 00.....40&5%
No. 5, $24.00 ..... 40&5%
Leach's. Nos. 0, $5.00; No. 1, $15, 10@20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. .....50&5%
Bemis & Call Co.'s Lever and Spring Hammer.....50&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut.....12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star. 25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7.00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent. .....₩ doz $3.00
Lloyd's Acme.....₩ doz $15.00, 40&10%

Sharpeners, Knife.
Arkins.
Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobo a. ₩ doz $900 40%
Shaves, Spoke
Iron.....45¢
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%
Shears—
American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881.
60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality .....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears 10%
Clipper. .....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3¼ to 9 in, ₩ doz, $1.00 ₩ inch
Electric Cultery Co.....Net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@40%
Snips, J. Mallinson & Co.....33⅓%
Shelves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec., 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 .....60&10&2%
Sargent's list.....60&10%
Reading list .....60&10&10%
Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Arise.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890.....
40&10&10@40&10&10&5%
Ship Tools—
L. & I. J. White.....20&5%
Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory. $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢
Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag	$1.35	$1.40
Drop, up to B, 5-℔ bag	.35	.35
Drop, B and larger, 25-℔ bag	1.60	1.65
Drop, B and larger 5-℔ bag	.40	.40
Buck and Chilled, 25-℔ bag	1.60	1.65
Buck and Chilled, 5-℔ bag	.40	.40
Dust Shot, 25-℔ bag	2.00	2.00
Dust Shot, 5-℔ bag	.45	.45

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S. .....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....30@30&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....30@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30 %
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel .....60&10@60&10%
Terre Haute Shovel and Tool Co.....25%
Shovels and Tongs—
Iron Head .....60&10@60&10&5%
Brass Head.....60&10&10%
Sieves—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.
₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $2.00

Sieves, Wooden Rim—

	Iron.	Plated
Mesh 18, Nested, ₩ doz	80¢	$1.00
Mesh 20, Nested, ₩ doz	96¢	1.10
Mesh 24, Nested, ₩ doz	$1.15	1.25

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%
Slates—
School, by case.....50&10@50&10&10%
Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Saugent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
E. Covert's Triumph.....33⅓%
Snaths, Scythe.
List.....50@50&5%
Soldering Irons—See Irons, Soldering.
Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.
Spoke Shaves—See Shaves, Spoke.
Spoke Trimmers—See Trimmers, Spoke.
Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
184 Rogers' German Silver.....60&5%
224 Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891 .....60&7½&5%
Boardman's Britannia Spoons, case lots.....60&5% cash
Springs—

Door.—

Torrey's Rod, 39 in.....₩ doz $1.20@1.25
Gray's, ₩ gr., $20.00.....25%
Bee Rod ₩ gr., $20.00.....20@25%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30.....50@50&5%
Gem (Coil), list April 19, 1886... 10@15%
Star (Coil), list April 19, 1886...20@20&5%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ doz, $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Bait Scroll.....60&10&10%
Cliff's Bolster Springs.....25%
Squares—
Steel and Iron, Nickel-Plated.....80&10@80&10&10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%
Squeezers.

Fodder.—

Blair's.....₩ doz $3.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00, 25&20%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved .....₩ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $5.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King .....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass .....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ doz $0.75@$1 00
Improved.....₩ doz $4.00
Standard Fiber Ware—See Ware, Standard Fiber.
Staples.

Blind—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ¾ in. .....₩ ℔ 8@8½¢
Fence staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain..... } See Trd. Rep
Steelyards.....40&10@50%
Stocks and Dies—
Blacksmith's
Waterford Goods.....33⅓@40
Butterfield's Goods... .. 33⅓@40%
Lightning Screw Plate.....35@30%
Reece's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30
Gardner.....33⅓
Stops, Bench.
Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $5 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ doz $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60.....30%
Stone—

Scythe Stones.

Pike Mfg Co., II Ap 11, 1892 .....33⅓%

Oil Stones, &c.

Pike Mfg. Co.:

	Price ₩ d
Hindostan No 1	8¢
Sand stone	5¢
Washita Stone, Extra	60¢
Washita Stone, No 1	40¢
Washita Stone, No. 2	30¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Arkansas Stone, No 1, 3 to 5¼	$2.80
Arkansas Stone, No. 1, 5¼ to 8 in	$1.50
Turkey Oil Stone, 4 to 8 in	80¢
Turkey Slips	$2 60
Lake Superior, Chase	₩ ℔ 13¢
Lake Superior Slips, Chase	₩ ℔ 20¢

Dis. 40 & 40&10 %

Stove Polish—See Polish, Stove
Stretchers, Carpet.
Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz $0.90
Socket.....₩ doz $1.75
Gullard's.....25@25&10%
Strops, Razor—
Genuine Emerson.....60@60&5%
Imitation " .....₩ doz $2.00, 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat Padded, list Nov. 1,'89.50%
Electric Cultery Co .....Net
Stuffers or Fillers, Sausage—
Miles' "Challenge," ₩ doz $20, 50@50&5%
Perry .....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%
Sweepers, Carpet and Lawn—

Carpet.

Bissell No. 0.....₩ doz $1.00
Bissell No. 3 .....₩ doz $20 00
Bissell, Grand.....₩ doz $30.00
Stand rd .....₩ doz $24 00
Domestic .....₩ doz $21.00
Domestic, No 2 .....₩ doz $21.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Improved Parlor Queen,
Nickeled.....₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior .....₩ doz $22.00
Garland .....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King .....₩ doz $30.00
Weed, Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $22.00
Monarch.....₩ doz $22.00
Goshen.....₩ doz $21.00
Ladies' Friend.....₩ doz $15.00
Advance .....₩ doz $18.00
Supreme .....₩ doz $22.00

Lawn.

Thompson Mfg. Co.....30%

Tacks, Brads, &c.—

List October 19, 1889. Old established straight Weights Short Weight goods are sold at lower prices.

Carpet Tacks—

American, Blued	72½%
American, Tin'd and Cop'd	75%
Steel, Bright and Blued	78½%
Steel, Tinned and Coppered	75%
Swedes Iron, Blued	75%
Swedes Iron, Tinned	78%
American Iron Tacks	71½%

Swedes Iron Tacks—

S. S., Blued	71%
S. S., Tinned	74%
Lanc., Blued	60%
Lanc., Tinned	63½%

Gimp and Lace Tacks—

S. S., Blued	67½%
S. S., Tinned	71%
Lanc., Blued	60%
Lanc., Tinned	63½%

Basket and Trimmers' Tacks—

Lanc	67½%
S. S.	69 %

Hungarian Nails 64½%
Common and Patent Brads....6 %
Leathered Tacks.....90%
Brush Tacks.....68 %
Looking Glass Tacks.....35%
Picture-Frame Points.....40%
Finishing Nails.....64½%

Trunk and Clout Nails—

Black	67½%
Tinned or Coppered	71%
Basket Nails	61½%
Chair Nails	56½%
Cigar-Box Nails	54%
Tin Capped Nails	50%

Extra discount 25&2%.

Miscellaneous—

Double Point .....90@90&10%
Wire Carpet Nails .....60&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, S. & S. Mfg. Co.'s list .....50&10%
Tapes, Measuring—
American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%
Thermometers—
In Case.....80@80&10%
Thimble Skeins—See Skeins.
Ties, Bale St
Standard Wire, list.....50&10&5%
Tinners' Shears, &c.—See a Tinners' &c

Flaware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10%

Fire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....30@30&5%
L. & I. J. White.....30&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Chaves, Cincinnati Tool Co.....20%

Lumber.
Bing Peavies, "Blue Line"...₩ doz $20.00
Bing Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies...₩ doz $19.00
Cant Hooks, "Blue Line"...₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $16.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.
Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩ doz $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₩ gro $13.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....35%

Trimmers, Spoke.
Bonney's.....₩ doz $10.00, 50%
Stearns'.....30@10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....35%

Trowels—
Lothrop's Brick and Plastering.....30&10@35&5%
Root's Brick and Plastering.....10%
Disston's Br'k and Plastering..35@35&5%
Peace's' Plastering.....25@25&5%
Clement & Maynard's.....30@30&5%
Rose's Brick.....15@30%
Brade's Brick.....35%
Worrall's Brick and Plastering.....30%
Garden.....70%
Cleves' Angle Trowel. ₩ gro, No 1. $36.; No. 2. $30.; No. 3. $15. net @ N%

Trucks, Warehouse, &c.—
R. & L. Block Co.'s list, '92.....40%
Thompson Mfg. Co.....25%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 204, Mattress, ¼ and ⅛ ℔ Balls 5 to 6¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....13½¢
2-Ply Hemp, 1 ℔ Balls.....15½@16½¢
2-Ply Hemp, 1¼ ℔ Balls.....15½@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15½@16¢
2, 3, 4 and 5-Ply Jute, ¼ ℔ Balls.....10¢
Wool.....6½@6½¢
Paper.....13½@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..13¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....5%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40@50@40&10%
Merrill's.....15@20%
Sargent's.....20@10&10%
Backrus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....30@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20 @ 25 %
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....25%&10@35%&10&10%
Stearn's Silent Saw Vises.....35%@35%
Sargent's.....60%&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....30&10%
Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....40%
Cincinnati.....35&10%
Enterprise Pipe Vises, each.....$2.00
Massey Combination Pipe.....40 %

Wads—Price per M.

U.M.C.&W.R.A.—R.E., 11 up...	65¢
U.M.C.&W.R.A.—R.E., 9@10...	85¢
U.M.C.&W.R.A.—R.E., 8.....	95¢
U.M.C.&W.R.A.—R.E., 7.....	$1.10
U.M.C.&W.R.A.—P.E., 11 up..	1.15
U.M.C.&W.R.A.—P.E., 9@10..	1.50
U.M.C.&W.R.A.—P.E., 8.....	1.70
U.M.C.&W.R.A.—P.E., 7.....	1.80
Eley's R. E., 11 up.....	$1.70@$1.75
Eley's P. E. 11@10.....	2.00@2.25

Dis. 50&2

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....75@75&5%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....50&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11½ in.....		4.50
Cuspidors.....		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Indurated Fiber—25%
Spittoons, No. 2, ₩ doz.....$3.40
Basins, Ringed, ₩ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$1.00
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ½¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₩ ton $13@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.15

Wire and Wire Goods—
Iron—
Market,
Br. & Ann., Nos. 0 to 18...75&10@80%
Cop'd, Nos. 0 to 18.....75&5@75&10%
Galv., Nos. 0 to 18.....70@70&10%
Tin'd, Tin'd list Nos. 0 to 18, 70@70&10
Stone,
Br. and Ann'd, Nos. 16 to 18.. 80
Bright and Ann'd, Nos. 19 to 26..85&5
Br. and Ann'd, Nos. 27 to 36...83½&5
Tinned.....
Tinned Broom Wire 18 to 21, ₩ ℔.. 45%
Galvanized Fence, Nos. 8 and 9...70&10%
Brass, list Jan. 18, 1884.....25@33⅓%
Copper, list Jan. 18, 1884.....33⅓@40%
Annealed Wire on Spools.....60%
Malin's Steel and Tin'd on Spools.....60%
Malin's Brass and Cop. on Spools.....50%
Tate's Spooled, Tin'd & Annealed..63&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire .....$5.00 to 2, 30%
Steel Music Wire, 12 to 30...60@70% ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.

Bright Wire Goods—
Standard list.....35%

Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—Prices unsettled. See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&5%
Coes' "Mechanics".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural.... } 75&10%
Girard Agricultural..... }
Lamson & Sessions' Agricl.. } 75&10&10%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Briggs's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30&10%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&5%
Acme, Nickeled.....40&5%
Hercules.....70@70&5
Walker's.....30&5%
Diamond Steel.....35&5%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....35&10&5%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2 % cash
Peerless Mfg. Co., list Feb., 1892..2% cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892. 30&5%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw, per gal.	42	@	..
Linseed, City, boiled.....	45	@	..
Linseed, Western, raw.....	41	@	..
Lard, City, Extra Winter..	57	@	58
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1....	44	@	45
Lard, City, No. 1.....	40	@	42
Lard, Western, prime.....	55	@	56
Cotton-seed, Crude, prime.	29½@		..
Cotton-seed, Crude, off grades.....	26½@		28
Cotton-seed, Summer Yellow, prime.....	32½@		..
Cotton-seed, Summer Yellow, off grades.....	30	@	31
Sperm, Crude.....	68	@	..
Sperm, Natural Spring.....	67	@	70
Sperm, Bleached Spring....	73	@	75
Sperm, Natural Winter.....	73	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	55
Whale, Bleached Winter...	57	@	58
Whale, Extra Bleached....	59	@	60
Sea Elephant, Bleached Winter.....	62	@	63
Menhaden, Crude, Sound..	..	@	31
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	37	@	..
Menhaden, Bleached W'ter,	38	@	..
Menhaden, Extra Bleached	40	@	42
Tallow, City, prime.....	44	@	45
Tallow, Western, prime....	42½@		43
Cocoanut, Ceylon.....	5½@		5½
Cocoanut, Cochin.....	6	@	6¼
Cod, Domestic	38	@	40
Cod, Foreign.....	43	@	45
Red Elaine	34	@	36
Red Saponified..... ₩ ℔	4½@		5
Bank.....per gal	35	@	36
Straits.....	36	@	37
Olive, Italian, bbls.....	60	@	62
Neatsfoot, prime	50	@	60
Palm, prime, Lagos....₩ ℔	6	@	6¼

Mineral Oils.

Black, 30 gravity, 25 @ 30 cold test..... per gal	7	@	7¼
Black, 30 gravity, 15 cold test.....	7½@		8
Black, 30 gravity, summer.	6	@	6½
Cylinder, dark, filtered ..	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity.	11½@		12
Paraffine, 25 gravity.....	10½@		11
Paraffine, 28 gravity.....	8	@	8½
Paraffine, red, 23½@24 gr'ty	10½@		11

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00	@	$24.00
Barytes, Amer. floated...	20.00	@	25.00
Barytes, Amer. No. 1....	15.00	@	17.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk..... ₩ ton.	1.75	@	2.00
Chalk, in bbls.. ₩ 100 ℔.	33	@	40
China Clay, English.. ₩ ton.	13.00	@	15.00
Cobalt Oxide, prep'd....	9.00	@	11.00
Cobalt Oxide, black.. lots 100 ℔	2.50	@	....
Cobalt, Oxide, black..... less 100 ℔	2.65	@	2.90
Green, Paris, in bulk.....	13	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14	@	16
Green, Paris, small pack.	15½@		22
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure....	22	@	25
Lead, Eng., R.R. white..	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔....	7¼	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6¾	@	7
Kegs, lots 5 tons to 12 tons..	6½	@	6¾
Kegs, lots 12 tons and over..	6¼	@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....		@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..		@	¼
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ⅛ bbls....	6¼	@	7¼
Lead Red, kegs.....	6¾	@	7¼
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ⅛ bbls.....	6¾	@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.25	@	1¼
Ocher, French Washed.....	1½@		2½
Ocher, German Washed.....	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English...	8½@		9
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	8½@		09
Orange Mineral, American.	8½@		8½
Paris White, English Cliffstone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.10
Red, Venetian, English....	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	4½@		5½
Sienna, Ital., Raw Lumps..	1½@		3½
Sienna, American, Raw....	1½@		1½
Sienna, American, Burnt and Powdered.....	1½@		1½
Talc, French.....	1½@		1½
Talc, American.....	0½@		1½
Terra Alba, Fr'ch. ₩ 100 ℔	75	@	80
Terra Alba, English	70	@	75
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Bat. and Powd..... ₩ ℔	3½@		4
Umber, Turkey Bat. Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber, Turkey, R'w Lmps	2½@		3½
Umber, Turkey, Bat. Amer.	1½@		1½
Umber, Turkey, R'w Amer.	1½@		1½
Yellow, Chrome.....	10	@	20
Vermillion Americ. Lead..	11½@		17
Vermillion, Quicks'er, bulk.	57	@	..
Vermillion, Quicks'er, bags.	58	@	..
Vermillion Quicksilver, smaller pkgs.....	62	@	..
Vermillion English Import	85	@	90
Vermillion, Imitation, Eng.	8	@	35
Vermillion, Trieste.....	90	@	92½
Vermillion, Chinese.....	92½@		95
Whiting Comm'on. ₩ 100 ℔	35	@	45
Whiting, Gilders'.....	50	@	60
Zinc, American, dry....₩ ℔	4½@		5
Zinc, French, Red Seal.....	..	@	3½
Zinc, French, Green Seal..	..	@	3½
Zinc, French, V. M. X....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6½
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@		11½
lots less than 1 ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal,.....	11	@	
lots of 1 ton and over....	10	@	10½
Lots of less than 1 ton....	10½@		10½

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Black, Drop, Frankfort	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best....	30	@	35
Black, Lampblack, Common	7	@	12
Black, Ivory.....	5	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	30	@	42
Blue, Ultramarine.....	12	@	13
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	12	@	13
Sienna, Raw.....	7	@	15
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ⅛ bbls....	.01½@	.01¾
In tubs.....	.01¾@	.01¾
In tin cans.....	.01¾@	.02¼
In bladders.....	.01¾@	.02½

Spirits Turpentine.

In regular bbls.....	30	@	..
In machine bbls.....	30½@		..

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	13	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	12
English.....	10	@	13
Irish.....	12	@	..

CURRENT METAL PRICES.

JUNE 22, 1892.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 3 in. round and square.. 1 to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1¼ in. 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.10¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.30¢
Rods—¾ and 11-16 round and sq.	₩ lb 2.10 @ 2.20¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.40¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb 3 @	3½¢
17 to 20	₩ lb 3¼ @	3½¢
21 to 24	₩ lb 3¼ @	3½¢
25 and 26	₩ lb 3⅜ @	3¾¢
27	₩ lb 3½ @	3¾¢
28	₩ lb 3⅝ @	4 ¢
American B. B.	₩ lb 4¢ @ 4¼¢	

Galvanized Sheet Iron.

	B. B.	2d qual
Nos. 10 to 16	₩ lb 4.20¢	4 ¢
17 to 22	₩ lb 4.60¢	4.30¢
23 to 24	₩ lb 4.90¢	4.70¢
25 to 26	₩ lb 5.30¢	5 ¢
27	₩ lb 5.60¢	5.30¢
28	₩ lb 6 ¢	5.70¢
29 to 30	₩ lb 7 ¢	6.70¢
Genuine Russia, according to assortment	₩ lb 11¼¢ @ 11¾¢	
Patent Planished	₩ lb A, 10¢; B, 9¢	
Craig Polished Sheet Steel	₩ lb, 8½¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged. Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	23½¢
Straits, Pigs	23 ¢
Straits in Bars	25 ¢

Tin Plates.

Duty: 2.2 cents per pound.

Charcoal Plates.—Bright.

Guaranteed Plates command special prices, according to quality.

			Per box.
Melyn and Calland Grade.	IC,	10 x14..	@ $6.50
" " "	IC,	12 x12..	@ 6.75
" " "	IC,	14 x20..	@ 6.50
" " "	IC,	20 x28..	@ 13.00
" " "	IX,	10 x14..	@ 8.50
" " "	IX,	12 x12..	@ 8.75
" " "	IX,	14 x20..	@ 8.50
" " "	IX,	20 x28..	@ 17.00
" " "	DC,	12½x17..	@ 6.00
" " "	DX	12½x17..	@ 8.00
Allaway Grade	IC,	10 x14..	@ 6.00
" "	IC,	12 x12..	@ 6.25
" "	IC,	14 x20..	@ 6.00
" "	IC,	20 x28..	@ 12.00
" "	IX,	10 x14..	@ 7.50
" "	IX,	12 x12..	@ 7.75
" "	IX,	14 x20..	@ 7.50
" "	IX,	20 x28..	@ 15.00
" "	DC,	12½x17..	@ 5.50
" "	DX,	12½x17..	@ 7.00

Coke Plates.—Bright.

Steel Coke.—IC,	10 x 14, 14 x 20..	$5.70	@ $5.75
	10 x 20..	....	@ 8.50
	20 x 28..	11.50	@ 12.00
	IX, 10 x 14, 14 x 20..	....	@ 7.00
BV Grade.—IC,	10 x 14, 14 x 20..	....	@ 5.75

Charcoal Plates.—Terne.

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC,	14 x 20	@ $5.75
	20 x 28	@ 11.00
	IX, 14 x 20	@ 6.50
	20 x 28	@ 13.00
Abecarne Grade.—IC,	14 x 20	@ 5 65
	20 x 28 .. 10.75	@ 11.00
	IX 14 x 20	@ 6 50
	20 x 28	@ 13 00

Tin Boiler Plates.

IXX, 14 x 28	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
XX 14 x 31	112 sheets	@ 16.00

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 12¼¢
Ansonia Grade Arizona	@ 12 ¢
Ansonia Grade Casting	@ 11¼¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	33 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	23	23	23	24	25	28	30
30		72	22	23	23	23	25	27	31	...
36	96		22	23	23	24	26	30	33	...
36		96	22	23	23	25	27	31	35	....
48	96		22	23	24	26	28	32	....	....
48		96	22	23	25	27	29	33	....	....
60	96		22	23	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ¾ inch diameter and over, per pound. 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

10 % @ 20 % discount, according to size of order.

Copper Wash Bowl Bottoms.

Tinned ₩ lb 34¢, 10% @ 20 %

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	3½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes.

Net.

Dec. 16, 1891.

O. G.	N. G.	⅜	⅓	½	⅝	¾	1	1¼
8-14	6-12	30	26	23	22	21	20	17
15	13	31	26	24	23	22	21	18
16	14	32	27	25	24	23	22	18
17	15	33	28	26	23	24	23	19
18	16	35	29	27	25	24	23	20
19	17	36	30	28	27	26	25	22
20	18-19	37	32	30	29	28	27	24
21	20	39	34	32	31	30	29	27
22	21	41	35	34	32	31	30	29
23	22	43	37	35	34	33	32	32
24	23	46	39	37	36	34	33	34
25	24	49	42	39	38	37	36	38

Copper Tubes, 3¢ ₩ lb additional.

Copper Bronze and Gilding Tube, 5¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	38¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	48¢ ₩ lb
Bronze Tubing, 5¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36
Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.66
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.66	.76

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam.	.25	.27	.29	.33

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.57
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5	49¢	No. 11	55¢
No. 6	49¢	No. 12	55¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to ⅜ inch inclusive	18¢ ₩ lb
Over ⅜ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to ⅜ inch inclusive	19¢ ₩ lb
Over ⅜ to 2 inches inclusive	18¢ ₩ lb
Over 2 to 3½ inches inclusive	19¢ ₩ lb
Over 3½ to 5 inches inclusive	2 ¢ ₩ lb

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5¼¢
Bertha (pure)	8½¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	6½¢
Per lb	7 ¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4½¢ @ ..
Bar	5 ¢
Pipe, subject to discount 20 %	6¼¢
Tin-Lined Pipe, subject to discount 20 %	15¢
Block Tin Pipes, subject to discount 20 %	37½¢
Sheet, subject to discount 20 %	7¢
Old Lead in exchange, 3½¢ ₩ lb.	

Solder.

½ @ ½ (Guaranteed)	13¾¢
No. 1	11¾¢ @ 11¾¢
Extra Wiping	12 ¢ @ 12¾¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 15 @ 15¼¢
Hallett's	" .... @ 12 ¢

ALUMINUM.

Prices Per Ton.

Duty: 15 cents per pound.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light and Tinned Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 3½¢
No. 1 Pewter	₩ lb 14 ¢
No 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 5.50